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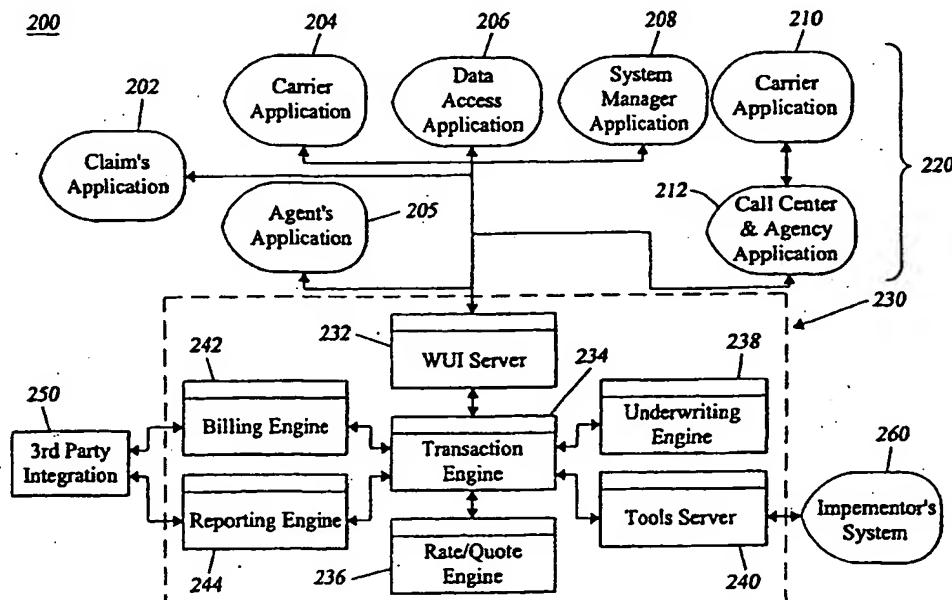
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(54) Title: METHOD AND APPARATUS FOR NETWORK-BASED AUTOMATED INSURANCE TRANSACTION PROCESSING



(57) Abstract: An insurance transaction processing system is comprised of a management system (230) that includes a variety of workstations (205, 250) configurable for any of a variety of users interfaced with a database management system that includes a set of engines and servers. Agents and clients may obtain and compare policies and associated rate quotes from a plurality of insurance carriers, based on client profile data input at the workstation. This system can underwrite, quote rates and bill.

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**METHOD AND APPARATUS FOR NETWORK-BASED AUTOMATED  
INSURANCE TRANSACTION PROCESSING**

**Background of the Invention**

5 The present invention relates to the field of computer and network based business application systems, and specifically to systems which relate to the presentation, processing, and maintenance of insurance products and related transactions over a distributed computer system.

Traditionally, insurance companies have utilized paper intensive systems for the presentation, processing, and maintenance of insurance policies to potential clients.

10 Additionally, claims processing and monetary transactions, such as bill payment or payment under a claim, have been accomplished largely by paper means. To initiate a policy, clients typically have had the choice of dealing directly with an insurance company's agent and, typically, being limited to that company's policy choices or dealing with an independent insurance agent, who may offer policy choices from a group of insurance companies. In either 15 case, the process of comparing, selecting, and processing a policy is largely accomplished by a variety of intermediate entities using largely paper processing, and to a lesser degree some computer processing. Additionally, because the processing of a client's policy, once selected, is extremely time consuming, often about six weeks, the insurance agent is only able to provide a policy quote, rather than an accurate premium (or price) to the client at the time the application 20 for insurance is taken. In some systems, despite some automation, a client is tentatively issued a policy, which is then subject to subsequent approval and possible cancellation if certain underwriting rules are not satisfied.

A typical process 100 for processing a client's policy selection is shown in Figure 1. Initially, a client meets with an agent to compare policies and policy options for a specific type of 25 insurance policy, e.g., home or auto. Based on the information provided by a client for the specific type of policy, the agent generates a set of comparative price quotes, shown in step 102. These quotes may be generated from company hard-copy literature or from tables stored in a computer, wherein the agents computer configuration is often highly customized with special software to access and use insurance company information - which may not actually be current 30 when used. As an example, a client may inquire about an auto insurance policy including comprehensive coverage. The client may then request different policy price quotes for the auto policy having different options (or elements) selected for comparison, such as having a \$500 versus a \$1,000 deductible option or having a towing option added to the policy. Additionally,

the premium of the policy depends on unique client information, such as driving record and the value of the auto to be insured, and unique insurance company information, such as current policy rates.

The need to process the insurance application through underwriting, including the need to

5 verify a variety of factors involved in accurately determining a policy premium, makes it impossible for the insurance agent to produce a definite premium at the time the policy application is taken. Therefore, the agent can, at best, only provide the client with a price quote or quotes, which are merely estimates. Such a system and process results in the client having to leave the application process without having certain premium information. Therefore, the client  
10 bears an undesirable cost risk that the policy may ultimately be more costly than envisioned, assuming it actually issues after the underwriting process is complete.

Once the client has selected a given policy, including any desired policy options, the agent prepares and submits a policy application to the insurance company (or carrier), shown in steps 104 and 106, and accepts a down-payment from the client. The insurance company's mail-room logs in the receipt of the policy application, step 108, forwards the policy application to the underwriting department, step 110, and forwards the client's down-payment to the company's billing department, step 109, where it is held until a decision regarding the issuance of the policy is made by underwriting. Among other things, the underwriting department verifies certain critical information in and related to the application. For example, the underwriting department

20 may verify a client's driving record 112, credit history 114, and criminal record 116, along with applying the most current set of available underwriting rules of the company 118 to the application. The nature of such inquiries is that the data used, whether client related or insurance company related, may not necessarily be current, i.e. the data may be "stale". And, even if current, may become stale between the time of inquiry and the time of policy issuance. In such  
25 cases, the insurance company unavoidably assumes the risk that the factors used as the basis for issuing a policy are correct and that these factors do not change between the time of making the inquiries and the time of issuing the policy. Based on the results of these types of inquiries and analysis, a determination is made regarding whether a policy will issue, step 120 (i.e., meets the underwriting guidelines). If the policy issues, step 122, it is mailed to the insurance agent, step  
30 124, who then notifies the client of the issuance of the policy.

Once a policy issues, a legal notice is issued to that effect, step 126, and a bill reflecting the final premium is generated. Typically, the insurance company's billing department credits the client's original down-payment toward the premium. If the amount of the premium is less

than the down-payment, then a refund for the difference is mailed to the insured client, in step 132. However, it is more typical that after application of the down-payment, a balance remains and the insured client is billed in accordance with agreed upon billing terms reflected in the policy, step 130. From thereon, the insurance company generates a billing schedule and mails a 5 bill statement to the client and the client returns statement with the appropriate payment. This process continues until the premium and any associated finance charges are paid in full.

In the case where the policy application does not meet underwriting guidelines, the underwriting department rejects the policy application, step 134, and notifies the insurance agent, step 136. The agent then works with the client to replace the policy application with a revised 10 application, step 138, that overcomes (if possible) the basis for rejection of the previous policy application, and in doing so returns to the initial step 102 of generating new quotes based on various policy changes. This process may be repeated until the agent and client finally arrive at a policy application that results in an issued policy by the underwriting department, if possible. While policies are often written to retroactively provide coverage back to the date of the 15 application, such protection is only useful to the client in the case where the policy issues. If the policy does not issue, the client has unknowingly been uninsured between the time of application and the time of rejection.

Therefore, it would be advantageous to the client to have a system which allows for comparison of a variety of insurance products having a variety of selected options at one time 20 and for immediate generation and receipt of accurate price quote information for such policies. Furthermore, a system which provides near-real time policy issuance would eliminate any significant gap in coverage between the time the client applies for a policy and the time the client is informed as to whether the policy has been approved for issuance. Also, a system which 25 allows insurance companies to efficiently maintain and control the underwriting guidelines, algorithms, rate tables, account information and other pertinent information which is accessible by agents, without a high degree of computer customization required by the agents, would expedite the policy application and evaluation process, while also reducing risk to the carrier associated with reliance on stale data.

Accordingly, it is an object of the present invention to provide a highly automated 30 distributed computer system for dynamically accepting user information and, based thereon, generating unique product candidate solutions, displaying said candidate solutions, accepting selection of one of said candidate solutions, and storing said solution. It is also an object to provide computer access to third party financial institutions to allow electronic transfer of funds

and credit card payments, for example, to facilitate bill and claim related payments. It is a further object of the invention to provide access to third party information providers (e.g., motor vehicle, claim, and credit databases), where available, to facilitate a more efficient underwriting process, for example. In such a system, it is a further object to allow real or near real-time 5 updates of product information.

### Summary of the Invention

The present invention is a data driven automated insurance transaction processing system operating over a distributed communication network to provide real or near real-time generation 10 of policy price quotes, underwriting and policy issuance, and generation of billing schedules. An insurance agent can login to the system over the network and gain access to a core set of engines (the "Core") and Framework databases, including databases containing a plurality of insurance provider's (or carrier's) information, and quickly provide a comparison of candidate policies and corresponding price quotes from among those carriers to a client. The client and agent may 15 select a preferred policy from among the candidate policies and in response the system issues the selected policy and generates a corresponding billing schedule. Payments against the policy premium can be made electronically by credit and debit card, payroll deduction, or electronic funds transfer. Additionally, insurance claims may be filed over the network, and a claims adjuster and an examiner may be automatically assigned from a database of preferred adjusters 20 and examiners. The system may also be configured to generate candidate policies of types other than that requested, using at least some of the client information provided.

The system architecture includes a user management subsystem and the Framework database system (and its Core set of engines). Among other things, the Framework database system includes at least one static database for storing standard procedures, rules, and rate 25 products and at least one dynamic database for storing data produced during a particular user session. The Core includes interfaces to related third party service providers (e.g., credit card and third party information source companies). The user management subsystem includes a group of software applications which may be configured for different types of users and that interface with the Core via the World Wide Web ("Web"), for example. As discussed below, 30 some types of users may access the Core using a standard Web browser, while other types of users require a client-side application to be resident in their computer. Depending on the login privileges of a user, the substantive interface to the Core will vary. An interface is primarily created by the presentation of screen images on a workstation or terminal display. For example,

a carrier's application interface allows an insurance provider to access the Core and view their customers' accounts. An agent's application interface allows access to the Core for generating a client's profile information and accessing insurance carrier's databases and algorithms for generating policy rate quotes, selecting a policy, issuing a policy, generating a bill schedule,

5 accepting premium payments and filing claims. A claims application interface allows access to the Core by claim examiner's and adjusters for processing claims, including reviewing a claim, tracking the claim, and issuing claim pay-outs to service provider's (e.g., repair shops) and to clients. A general developer's (or implementor's) system (i.e., a client-server application) includes several development tools that allow access to the Core databases for the creation and

10 maintenance of the Core and related applications. Using the development tools, a rating analyst, for example, may create and/or enter the Web User Interface (WUI) screens, rating tables, algorithms, underwriting rules, associate carrier/product information with territories, generate help text, and enter accident and violation information on a company/product basis. Access to the Core is also provided for the determination of agent's commissions and for generating system

15 reports.

The Core includes an application interface server which acts as the interface between the Core and the management system. In the preferred embodiment, the application server is a WUI server that generally manages access to other servers and databases within the Framework to accomplish tasks requested by the external users. An underwriting engine within the Core

20 accesses an underwriting rules database and applies these rules, as part of calculating a rate quote for a candidate policy, to input client profile information to determine whether or not the policy can be issued. If a candidate policy or policies satisfy the underwriting rules, a rate/quote engine within the Core generates a price quote for each candidate policy. A reporting engine is also part of the Core and generates reports concerning various system aspects and carrier based

25 information for different users, as appropriate. Once a policy has been issued, a billing engine within the Core generates a billing schedule, issues bills and invoices, and applies payments received to existing accounts. At the center of the Core is a transaction engine which controls the general tasking within the Core and which processes premium transactions and payments transactions. Premium transactions relate to creating, modifying, renewing, canceling, or

30 processing claims for an existing policy. Payment transactions relate to the transfer of money.

Brief Description of the Drawings

The foregoing and other objects of this invention, the various features thereof, as well as

the invention itself, may be more fully understood from the following description, when read together with the accompanying drawings, as described below.

FIGURE 1 is a flowchart of a typical prior art process for processing an insurance policy application.

5 FIGURE 2A is a block diagram of an insurance processing system and FIGURE 2B is a block diagram that includes the portions of the Framework and Core, in accordance with the present invention.

FIGURE 2C is a diagram of a set of development tools included in the implementor's system of FIGURE 2A.

10 FIGURE 3 is a diagram of a representative page displayed at a user's workstation and produced by the Core of the insurance processing system of Figure 2A.

FIGURE 4 is a table depicting a representative group of transactions performed by the transaction engine of the insurance processing system of Figure 2A.

15 Figures 5A - 5F are a series of tables which illustrate how a quote is achieved by the insurance processing system of Figure 2A.

FIGURE 6 is a diagram of a computer architecture embodying the insurance processing system of Figure 2A.

20 For the most part, and as will be apparent when referring to the figures, when an item is used unchanged in more than one figure, it is identified by the same alphanumeric reference indicator in all figures.

#### Detailed Description of the Preferred Embodiments

The present invention is a data driven automated insurance transaction processing system operating over a distributed communication network to, among other things, provide real or near 25 real-time generation of policy rate (i.e., price) quotes from a variety of insurance carriers' (i.e., providers or companies) multiple lines of business, issue insurance policies, and generate billing schedules. The system includes capabilities to determine and present insurance policy information from one or more of a variety of sources to facilitate comparison and selection by an insurance agent ("agent") and/or a client, based on client profile information or data which 30 describes relevant characteristics of the person or property to be insured. Additionally, the insurance processing system includes capabilities which facilitate efficient processing of an insured client's (the "insured's") claims. Using a compliment of automated processing and electronic data storage and transfer features embodied within the system, the present invention

allows for the paperless generation, comparison, and issuance of an insurance policy, as well as the electronic transfer of funds necessary for the payment of insurance premiums by the insured or the payment of claims by the insurance carrier. To accomplish this, the present invention provides real-time access to various external underwriting data sources, interfaces to outside services, such as policy printing and bank and credit card company systems, and is electronically coupled to various carrier systems.

The insurance transaction processing system is designed to allow a developer (e.g., a rating analyst or specialist) to accomplish the generation and maintenance of, for example, rate quote products using a set of user friendly (i.e., non-technical) development tools. Rating analysts are individuals knowledgeable in insurance rate subject matter, and are not required to be skilled in computer programming. Rate quote products are used, typically by an insurance agent, with specific client data to generate rate quotes for that client. The ease of use of the system provides the ability to rapidly develop and maintain a large number of rate quote products, spanning multiple lines of business, and covering all states.

In the preferred embodiment, the distributed communication network is the Internet and World Wide Web (i.e., the "Web") and the insurance processing system is a "Web-based" insurance processing system. In an alternate embodiment, the distributed communication network includes an extra-net (i.e., a form of wide area network (WAN)) using Web browser interfaces. Operating applications of the system, which implement relevant processes, and rate quotes produced by the system are delivered to users through a TCP/IP connection and a standard Web browser on the user's workstation. Delivering its services over the Web, the present invention generally minimizes costs, for example costs associated with the development and maintenance of the client-side workstation configuration.

To facilitate automated processing, the capabilities of the system are embodied in a combination of computer software and hardware. The system architecture implemented in the preferred embodiment includes a variety of terminals or workstations which run or access applications which then provide access to a Web User Interface ("WUI") Server, an implementor's system including a set of development tools for product development and maintenance and a corresponding tools server, a plurality of third party interfaces, and a database system that provides the underlining system functionality, referred to as the "Framework". For the most part, the Framework database system drives system processes. For example, the Framework database system contains the information required to build the user interface screens, maintains state in the Web-based applications, stores all of the business and underwriting rules,

drives external processes which interface with remote systems, and stores business rule and transactional data. Each data element, whether a rule, a rate factor, a screen display element or some other data element is tagged with an effective and an expiration date, which allows each of the periodic rate and rule changes to be specifically preserved in the system at all times. Entering 5 the appropriate policy effective date allows the corresponding rate, rule, and/or screen set to be automatically accessed at any time.

The Framework is driven by and includes a standard set of stored procedures that provide core, data driven functionality, referred to as "the Core". The primary functional areas of the Framework are built as a series of Core "engines" and servers. As will be described in more 10 detail and as shown in Figure 2A, the Web-based insurance processing system 200 includes a user management system 220 that interfaces with Core 230, wherein the Core also includes an interface to third party entities 250 and to a developer's/maintainer's, or implementor's, system 260. The user management system 220 includes a variety of computer terminals or workstations that have access to Core 230 for transaction processing. The workstations may be remote to each 15 other and to the Core, wherein communication among the various workstations and the Core takes place over the Web using standard communication links (e.g., phone lines). While the preferred embodiment uses the Internet and Web as a communication medium, other types of networks, such as an Intranet, extra-net, local area network (LAN), WAN or a combination of networks could also be used. A workstation may be any commercially available desktop 20 computer running a standard operating system and Web browser (e.g., Internet Explorer™ by Microsoft Corporation). As such, the workstations do not require any significant customization to access the Core.

The WUI server 232, which is an application server, is the primary interface between each workstation and the servers and engines of the Core 230 and the Framework databases they 25 access. The WUI server 232 may be any commercially available server configured to communicate across the Internet and Web with the workstations. The engines provide the primary processing capability of the system 200, and include the necessary logic and hardware to accomplish relevant insurance processing related tasks by acting on both transactional and business rule data stored in dynamic and static Framework databases, respectively. Data which 30 identifies the client and/or item to be insured, along with any other required client specific information required by the system 200, is referred to as client profile information or data, which is supplied by user input at a workstation during a session and constitutes at least a portion of the transactional data stored in a dynamic database. Data related to a specific policy, either an issued

or candidate policy, is referred to as policy data and includes client profile information as necessary, and also constitutes at least a portion of transactional data.

A simplified database structure is shown in Figure 2B, those skilled in the art will appreciate that the databases may or may not be physically co-located with the engines or with 5 each other and may be distributed over several devices and backed-up and mirrored as desired. Because the system is both an insurance transaction processing system and a development system (used for, among other things, maintenance and updates), the Framework database system 225 design is easily extensible by using commonly available and standard devices and interfaces.

Extensibility is also accomplished in large part through the use of vertical "objectized" data 10 structures. That is, when new data elements are required, they are added as a row in a data element master table, not as columns in a hard-coded table structure. Data element properties are stored in related tables and may be configured by product, carrier, or user, for example. The database structure is discussed further below and with respect to Figures 2B and 6.

#### I. Management System (Workstations)

15 There are several types of users which may access the Core to perform, in most cases, a subset of available system functions. For example, typical users may include insurance agents, clients, insurance carriers, claims adjusters and examiners, and system developers and maintainers (e.g., a "rating analyst"). In the preferred embodiment, different types of users have different privileges. For example, insurance carrier rating analysts have privileges to create and 20 update rate tables and underwriting rules within the Core, but clients may only have privileges to review an existing policy and account information, and agents may only have privileges to generate, renew, and review a policy. Consequently, the system 200 includes user specific application interfaces (i.e., computer screens and functionality) rendered on workstations 202 - 212. Some of these application interfaces merely require a standard Web browser to access the 25 Core, while others require user specific client-side applications. These application interfaces allow predetermined types of access to Core 230, each interface having functions specific to its corresponding type of user, based on predetermined user privileges. These workstations and interfaces are collectively referred to as the user management system 220. The Web browser application interfaces are actually generated by the Core and communicated to the workstations 30 as hypertext markup language (HTML) code and then rendered on the workstation within a Web browser.

In Figure 2A, a group of representative user specific "applications", each running on a standard workstation, is shown as a simplified depiction of the preferred embodiment. However,

in practice, a plurality of workstations running the same application, for example, a plurality of workstations at different locations running agent's application 205, is more likely to be the case. Additionally, each workstation may run more than one type of application, such flexibility being a function of the login privileges of different types of users (e.g., carriers, agents, and claims adjusters), and wherein such users may login to and access the Core from any Web enabled workstation. As a general notion, types of users and access privileges may be defined in a variety of ways, as is known in the art. In the preferred embodiment, communication between the Core and each workstation takes place over the Web (and Internet) using commercially available hardware and software interfaces, systems and communication links (e.g., phone lines).

5      Each type of user specific application included in management system 220 is described more fully below.

10

Referring once again to Figure 2A, a claims application 202 allows a claim examiner and adjuster to access the Core and manage the processing of insurance claims via a Web browser.

Claim information may initially be entered into the Core via an agent's (or carrier's) workstation

15      and an examiner and adjuster may be automatically assigned to the particular claim or recommended from a Core database of preferred examiners and adjusters. An examiner or adjuster may update and manipulate claim data from a workstation running claims application 202 during the course of claim resolution. Other users may also take part in updating or providing claim related data, such as an agent or carrier. Furthermore, an adjuster may facilitate

20      payment of a claim electronically by transferring funds from the carrier's bank to the insured's bank or to the bank of a service provider. A service provider may be any entity involved in the repair, replacement, or resolution of the subject matter of the claim, such as an auto repair person or shop.

A carrier's application 204 is a compliment of carrier screens and functionality displayed

25      and available within the Web browser of a workstation and which allows a carrier to access the Core directly for carrier specific purposes. The carrier's application 204 provides access to the Core to allow the carrier to update carrier information, such as rate tables and underwriting rules stored in the static Framework database 255. The carrier's application 204 also allows the carrier to access and manipulate existing policy and account information (stored in the long term

30      database 265), accomplish payment transactions, generate new policies, and so on.

An agent's application 205 is a compliment of screens and functionality displayed and available within the Web browser of a workstation to allow an insurance agent to generate price quotes, have policies issued, query existing policies, and process claims, for example. In

practice, the actual privileges associated with an agent's workstation may vary depending on a variety of factors. For example, it may be the case where an agent may only be authorized to sell products from a certain carrier or carriers, while other agents may be authorized to sell products offered by any available carriers. It is envisioned that workstations or terminals running the agent application will be located at various locations where agents service the needs of existing and potential clients. For example, access to the system of the present invention may be franchised to agents and agencies, wherein agent workstations may be located in any of a variety of locations as franchise locations. Such locations may include traditional agency offices or non-traditional forums such as retail store or wholesale club locations, as a means of improving the consumer's accessibility to such insurance related services and products.

A data access application 206 is a compliment of screens and functionality displayed and available as a client-side application running on a workstation that is used for accessing and extracting data from and storing data to the management system 220. The data access application 206 may be used by any of a variety of users to obtain reports and data consistent with the user's privileges. For instance, data (e.g., system performance measures) may be extracted from the Framework database system by a system manager using the data access application 206 to determine if system performance is acceptable.

A system manager's application 208 is used to generally maintain the Core 230, e.g., keep applications, frameworks, utility versions, and so on up to date via a Web browser. The system manager can monitor system performance and tune the system by adjusting, to some degree, the allocation of system resources (e.g., processors and memory).

A commissions application 210 is a compliment of functionality and screens accessible on a workstation that is interfaced with a call center and agency application 212 to accomplish up-to-date commission processing and maintenance of commission rates within the a carrier's call center or an agency. The call center and agency application 212 logs on to the Core to retrieve information related to the determination of an insurance agent's earned commissions, such information being maintained within the Core as part of typical transaction processing.

## II. The Core 230

The Framework database system provides the primary functionality and data storage capability of the preferred embodiment of the present invention, and it is the Core 230 of the Framework which provides the functionality, as shown in Figure 2B. Core 230 accesses a series of Framework databases which store data, such as business and underwriting rules for each insurance carrier (in database 255), client policy and account information (in database 245 and/or

265), and all other necessary business and transactional data. In the preferred embodiment, the Framework databases are object-centric relational Structured Query Language (SQL) databases, version 6.5. SQL databases are known in the art and are not discussed in detail herein. For the most part, Core 230 includes a series of stored procedures that provide data-driven functionality, referred to as "engines" and servers. As examples, the engines and servers use the data in the Framework databases to build user interface screens, generate policy information and quotes, issue, store and maintain policies, and accomplish claims processing. These engines and servers include: billing engine, rate/quote engine, reporting engine, tools server, transaction engine, underwriting engine, and WUI server. Generally, the servers provide interfaces between external users and the Core and the engines accomplish tasks in response to server requests. The Core includes external interfaces to the management system workstations and to third party systems for performing a variety of ancillary insurance transaction functions, such as electronic funds transfer, credit/debit card authorizations and transactions, and lock box processing. Core 230 also includes an interface to implementor's system 260, which includes a set of development tools for the creation of WUI pages, rate tables, underwriting rule databases and so on, as well as general maintenance of the system. Each engine and server is described below.

a. WUI Server 232

The WUI server 232 is the primary interface of external users to the Core for processing insurance transactions. In the preferred embodiment each WUI server is a commercially available server running Windows NT™ Server 4.0 software, by Microsoft Corporation. The WUI server 232 includes functionality which generates and communicates, in real-time, HTML computer screen information corresponding to a screen image to be rendered at a user's workstation during a session. When the HTML screen information is received, the user's workstation processes the information using a standard Web browser to produce and present the desired screen image. As the interface to the workstations of the management system 220, the WUI server controls user privileges, as a function of the user's login, for accessing the Core.

More specifically, the WUI server 232 extracts rules from the Framework databases, as shown in Figure 2B, guiding which graphic, data, and functional elements are to be displayed then dynamically builds pages according to a predefined general layout. As a result, system performance is enhanced, wherein the WUI server 232 generates screen information dynamically in response to user inputs, such that the next screen to be displayed is a function of the client profile information and responses input in the current (and previous) screens, as well as the business and underwriting rules stored within the Framework databases. Building screens

dynamically involves generating and sending software code from the WUI server 232 to a workstation, wherein the Web browser running on the workstation compiles the code (e.g., HTML code) and builds the screen therefrom. The preferred embodiment employs software written using a commercially available server-side scripting software language, such as

5    5 ColdFusion® (by Allaire™ Corporation), to accomplish the dynamic generation of screen images processed and displayed by the Web browser, using data from the Framework databases. Therefore, once the user submits responses to the WUI server 232 (via a workstation) the server executes the server-side scripting language (which is an application) to quickly generate HTML code, which is then sent by the WUI server back to the workstation and Web browser of the user.

10    10 The Web browser running on the workstation then builds the appropriate screen using the HTML code.

To start a session, a user logs on to WUI server 232 via the Web using the standard Web browser interface. The user may, for example, be an agent working with a client to obtain policy information and compare policies or a user may be a client seeking to review the status of an 15 existing policy. In other embodiments, the client may be given the flexibility to compare and have policies issued without the use of an agent. Using agent's workstation 205 and WUI server 232 generated screens, the user enters client profile information (or client data) to define the client and/or property to be insured to the system 200 and to identify the type of policy or policies of interest, which is stored in transactional database 245 during the agent's/client's 20 session. Client data identifies the client and subject matter of the policy of interest and includes, for example, the client's name, age, and address, and also includes any basic information necessary for the system to generate one or more policy rate quotes for the type of policy of interest. For example, this basic information may include the make, model, and year of an automobile to be insured. In addition to generating computer screen information, the WUI server 25 232 manages the flow of information in and out of the Core, and (along with the transaction engine 236) the assignment of tasks to engines and the storing of data into Framework databases.

Through the WUI server 232, users remotely perform a variety of transactions, such as obtain policy rate quotes, access billing information, and process claims. To facilitate the input of relevant information for processing a transaction, the WUI server 232 incorporates a 4-level 30 hierarchical tree structure within the screen images, including pages 300, sections 305, questions 310, and options 315 (the lowest level), as shown in Figure 3. That is, a page contains sections, sections contain questions, and questions contain options. As an example, page 300 in Figure 3 relates to an automobile policy and the input of client profile information. A page is an

5 electronic graphical equivalent (i.e., screen image) of a physical page of data. A section 305 divides a page 300 into sets of questions 310. A question 310 solicits a response and, thereby, obtains information for the Core transaction processing. A question may be visible or hidden, wherein a visible question may ask for date of birth and the hidden question may compute age therefrom. For the most part, responses to questions are stored in dynamic transactional database 245.

10 Each question is assigned a data type to define the form of the response, which corresponds to a data definition within a Framework database. In the preferred form, data types include free text, drop-down list, and button. A data type of free text relates to a question that requires a free text response typed into a corresponding answer field. A data type of drop down list means that the question requires the response be selected from a corresponding list of responses (i.e., options 315). A data type of button refers to a question that is displayed as either a button or hyperlink, which when clicked submits a request for a new page to the Web browser. Questions may also include formulas, typically embodied within the servers and engines, that 15 aid in the generation of the code corresponding to the next page to be submitted to the workstation. For example, if a user selects the option "Under 25 years of age", then the code generated for the next page submitted will be different than if the user selected the option "Over 25 years of age". Those skilled in the art will appreciate that other forms of input data types may be used, such as graphical sliding scales, audio/voice data input, and so on, without departing 20 from the present invention.

25 In practice, once the user has logged into the Web server 232, the Web browser running on the remote user's workstation submits a request for a page to the WUI server 232. The WUI 232 server analyzes the request and returns the appropriate screen image code and data to the workstation, assuming the request is consistent with the user's privileges. The WUI server 232 passes user requests and associated tasking to the transaction engine 234 (as shown in Figures 2A and 2B), which then tasks the other Core engines and servers to accomplish tasks related to the user's request, some of which may involve the Core obtaining information from third parties. For example, if a user is seeking to obtain rate quotes for a new auto insurance policy in Massachusetts, Core 230 may be configured to automatically request the client's driving record 30 from the Massachusetts Registry of Motor Vehicles, assuming it is available on-line, and such information may be used in determining whether the client is insurable and, if so, comparative policy rate quotes are generated.

b. Transaction Engine 234

The transaction engine 234 receives user transaction requests via the WUI server 232 and serves as the central director and manager for processing within Core system 230, as shown in Figures 2A and 2B. In response to workstation requests by a user, the WUI server 232 passes the user's request to the transaction engine 234 for processing. The transaction engine then controls

5 the processing of the transaction using the other engines and servers within the Core 230 and Framework databases as needed. In the preferred embodiment, transactions primarily fall into one of two groups, either premium transactions or payment transactions. Premium transactions potentially effect the policy premium. The types of transactions in the premium transaction group include: new business (i.e., policies) and policy amendments, changes, endorsements, 10 renewals, cancellations, rescissions, terminations, non-renewals, and claims processing.

Payment transactions involve the transfer or exchange of money, and the group includes billing termination and resumption, premium returns, receipt of payments (including cash), transfers of funds electronically, and write-offs. A representative list of actions (i.e., transactions) and descriptions preformed by the transaction engine 234 in the preferred embodiment is provided in

15 Figure 4. Generally, each type of transaction is customary in the insurance business and will not be explained in detail herein and, in fact, most are self-explanatory.

The transaction engine 234 includes three managers, which are embodied in stored procedures and data (associated with, for example, rating server 630a of Figure 6) used for processing transactions, and serves as the central processor of the WUI server 232 requests. As

20 such, the transaction engine 234 interacts with other servers and engines within the Core and Framework databases, as required. The transaction engine 234 includes a transaction manager, a quote manager, and a policy manager, in the preferred embodiment. Generally, the managers respond to user manipulation of a WUI screen (e.g., answering questions) at the user's workstation to create, modify, or view a policy, for example. As part of a user's request, the

25 WUI Server 232 assigns a value ("Q" for quote or "P" for policy) to a "transaction type" parameter associated with the user's request. The WUI server 232 calls transaction engine 234 which invokes the transaction manager to service the user's request for a transaction, using procedures, rules, and rate products in database 255. In the preferred form and as shown in

Figure 2B, the standard procedures, rules, and rate products are stored in substantially static

30 database 255 and transactional data (e.g., client profile data and rate quotes) associated with a particular user's session are stored in a dynamic (or relatively temporary) database 245. It should be understood that databases 255 and 265 are not truly static, in that they are updated from time to time, for example, when a carrier issues new rate products. However, with respect to the

session oriented dynamic database 245, databases 255 and 265 are relatively static.

Based on the value of the transaction type parameter, the transaction manager directs the request to either the quote manager or the policy manager. If the user has requested comparative policy rate quotes the transaction type parameter is set to "Q" and the transaction manager

5 invokes the quote manager to operate on the request by interacting with the rate/quote engine 236. The quote manager saves information from the front-end (i.e., workstation) to a quote repository in dynamic database 245 for use by the rate/quote engine and retrieves information from the repository for use by the front-end. Once the rates are determined by the rate/quote engine, the quote information is passed from the rate/quote engine 236 to the billing engine 242

10 (but staying within database 245), where a billing schedule is automatically generated.

If the quote type parameter is set to "P" and a policy already exists, the transaction manager invokes the policy manager to retrieve the requested policy and, subsequently, desired policy actions (e.g., renew) may be accomplished. On the other hand, if the quote type parameter is set to "P" and a policy does not exist, the transaction manager invokes the policy manager to

15 create a new policy image into which the client profile data is merged, and processing is passed to the rate/quote engine 336 for generation of a rate quote, which is stored in transactional database 245 until the policy is issued or the session is ended.

c. Rate/ Quote Engine 236

The rate/quote engine 236 provides the client and agent with a quote, or bottom-line price, for an insurance product or products. The rate/quote engine is a set of back-end procedures and tables in static database 255 that perform mathematical calculations. The engine 236 matches rating elements with client profile information in dynamic database 245 to calculate "components", which are the building blocks of a quote. Premiums are calculated for each component and the sum of all premiums is presented as the quote. For the most part, there are

25 three parts to the rate/quote engine 236: client profile information, rate product algorithms, and quotes. Client profile information (i.e., client data) is information stored in database 245 about the client that is entered at a workstation into the WUI server 232 by the user, as discussed previously. The rate product algorithms are stored in database 255 and used to calculate rate quotes, each carrier may have their own algorithms and each policy type and policy option

30 offered by each carrier may have a unique set of algorithms. A quote is the policy cost at a given point in time. And, rating elements are carrier defined rates for individual coverages.

A component is the mathematical representation of a coverage, which, when combined with other components, comprises the total premium. For any component, there can also be sub-

components. For an item to be a component of a coverage or total premium, it must be computed before the coverage or total premium is computed. While components are mathematical expressions, formulas determine the amounts that comprise the components. Since the determination of one component may be used to determine another component, components are processed in a deliberate order, referred to as the "rate sequence."

5 To understand how components and a rate are calculated, it is useful to know how carrier manual details (rates, algorithms, etc.) are mapped to formulas and components. As an example, Figure 5A shows a table of the bodily injury (BI) rating elements listed in an insurance manual for a hypothetical carrier XYZ. BI is just one of the numerous rating elements that make up the 10 total premium. The left column (a through k) lists the elements that make up the BI rating component. The right column (A through J) lists the component calculations (or formulas). With the above information, a tree-diagram is created which represents how the rating elements are to be processed. This tree is created by starting at the first element to be processed (i.e., Base Rate x Territory Relativity) and diagramming the components until the last element is included. 15 Figure 5B shows the resulting tree-diagram 510. Once the tree-diagram 510 has been created, the rating elements can be entered into the system, applying formulas to components and assigning rate sequences.

A rate sequence is a number assigned to each element and represents the order in which 20 elements are processed in order to calculate the total premium. For example, if there are two components, Territory Relativity and Multi-car Discount Factor, and the Multi-car Discount Factor needs to be multiplied by a number that includes Territory Relativity in its formula, Territory Relativity will have a lower rate sequence than Multi-car Discount Factor. In this case, the rate sequence assigned to the Base Rate times Territory Relativity is 10, and the sequence assigned to Multi-car Discount Factor is 35. This way, the components that make up the Multi-car Discount multiplier (which includes Territory Relativity) can be processed first. It is 25 preferable to have a unique rating sequence for each component, but the rate sequence number need not be unique. For example, two unrelated questions, both with a rate sequence of 10, will be processed in an arbitrary order as determined by the system immediately after questions with rate sequences of less than 10.

30 The rate/quote engine inverts the tree-diagram of Figure 5B, as shown in Figure 5C, and starts processing at the lowest level of the tree. In this example, components with rate sequence 60 are the individual coverage premiums. Components with rate sequence 70 are the sums of these premiums and many other factors that may be applied (e.g., car rental factor). Rate

sequence 80 sums all the components, resulting in the total premium.

Components are calculated using rates and factors, which are based on coverage choices and associated limits and the client profile information. Figure 5D shows the base rate and the factors for the BI coverage, as defined by the hypothetical carrier XYZ. The base rate is

5 dependent on Territory and other similar client-related information. To illustrate how rating is done, the BI premium is calculated, as an example, using a specific hypothetical client profile. In this example the client profile information is such that the client:

- a) chooses 25/50 BI coverage,
- b) lives in territory 5,
- 10 c) is thirty-five years of age
- d) drives a car for pleasure (non-business),
- e) has one Driving Under the Influence conviction and one violation,
- f) would like to increase his limit factor,
- 15 g) owns one car that is rated as having "intermediate" performance,
- h) also has a homeowner's policy,
- I) always uses his car, and
- j) will pay semi-annually.

Figure 5E shows how the rates are assigned to this client profile for the BI coverage. The factors are calculated and shown in Figure 5F, wherein the total BI premium is \$853. This 20 premium is ultimately added to the premiums for other coverages (not shown), resulting in the total policy premium. In this example, there is one car and one driver. If a policy has multiple cars and/or drivers, the rate/quote engine will process a component calculation for each.

A temporary Framework database location, i.e., dynamic database 245, holds each 25 premium, that is each component calculation. The premiums for each component are summed to produce the total policy premium. The total policy premium is the quote, before issuance. In the preferred embodiment, two tables (i.e., databases) are populated when the actual rate/quote transaction occurs, a premium table and a question table. The premium table is where premium information is stored for each component calculation and includes effective and expiration date tags, since a rate quote will only be valid for a fixed amount of time typically. Ultimately, the 30 question table is used to save the answers associated with each component; this table stores the information used to obtain the quote. A policy (or total premium) quote is based on client profile information and the business climate at a specific moment in time. If the quote is accepted by the client, it is stored in permanent database 265 and made into a policy. If the quote is not

accepted, it may be saved in temporary database 245. In a comparative rating environment, there may be many quotes from multiple carriers stored.

The system may be configured to generate candidate or recommended policies of types in addition to the policy type for which the initial quotes were sought. In such a case, it would be 5 preferable, but not essential, that the system generate such candidate policies and quotes based solely on the client profile information input to obtain the initial quotes. As an example, if a client and agent requested quotes for an automobile policy, the system can search the Framework databases to determine whether the client has an existing homeowner's policy and, if not, the system generates and offers comparative homeowner's quotes to the client, in addition to the auto 10 quotes.

d. Underwriting Engine 238

Generally speaking, underwriting is the process in which a carrier assesses the risks of insuring the client and determines whether to offer insurance based on that assessment.

Underwriting rules exist in an underwriting rules database of the Framework for each type of 15 policy offered by each carrier, such as database 255. The underwriting engine 238 and rules are accessed by the rate/quote engine 236 in response to a request for a rate quote, such information and rules being used to facilitate the generation of a rate quote for a given carrier. In the preferred form, the rate/quote engine 236 tasks the underwriting engine 238 to apply rules before a quote is actually calculated. That is, once it is clear that the carrier would underwrite the 20 candidate policy, the rate quote is prepared and initially stored in transactional database 245.

e. Tools Server 240

The key to developing applications with the system is a development tool set included as 25 part of the implementor's system 260. The development tool set shields an application developer from the underlying table structures and stored procedures of the system and provides a user friendly, rapid development environment for building and maintaining rate quote products. For the most part, tools server 240 is accessed and used by the implementor's system 260 as an interface to Core 230. The tools server 240 is, therefore, a development and maintenance server which includes the functionality to process inputs from a developer or maintainer (e.g., rating 30 analyst) to create and edit WUI pages, sections, etc. and to create carrier products (e.g., rate quote products).

f. Billing Engine 242

The billing engine 242 generates a billing schedule, that is, a schedule of payments, issues bills and invoices, and applies payments. The billing engine 242 accesses third party

financial institutions to accomplish any of a variety of monetary transactions, as appropriate.

Monetary transaction methods include, for example, payroll deductions, electronic funds transfers, and credit/debit card transactions.

g. Reporting Engine 244

5 The reporting engine provides carriers, agents, and system managers with reports on various aspects of the system through the various applications. Such reports generally provide business management information. For example, the following reports are provided to the following types of users:

10 a) to carriers: new business, renewals, written/earned premium, claims etc.;

b) to agents: those of part a) above plus commissions;

and c) to system managers: same as part b).

III. Other Interfaces

a. Implementor's System 260

15 The implementor's system 260 is used by developers (e.g., rating analysts) to create and

20 maintain rating products (see Figures 2A, 2B, 2C and 6) stored in the static Framework database 255 and used by the Core's rate/quote engine 236. The implementor's system 260 includes several development tools (or tool modules), shown in Figure 2C, in the preferred embodiment, which are stored in static database 255. These development tools include a web user interface tool 261 that is used to design and layout WUI screens or pages, such as the computer display

25 screens accessed by an agent when requesting an insurance policy rate quote from the system 200. Such screens include information and questions which prompt the agent to enter client profile information required to provide a policy rate quote. A rating tool 262 is used to enter basic rates into rate tables and to enter and store rate algorithms and procedures. These rates, algorithms and procedures are associated with rating questions, which ultimately are presented to

30 a user in WUI pages, wherein the responses are used for determining the final rate quotes. Each carrier determines their own rates and algorithms and those are built into Core 230 using the rating tool 262. An underwriting tool 263 is used to enter carrier specific underwriting rules as logical formulas into static Framework database 255. A territory tool 264 is used to enter the specific territories and corresponding rate factors used by the rating engine, per company and per

35 product. Accordingly, territory codes are associated with ZIP codes corresponding to the geographic area or areas for which insurance coverage can be obtained. Generally, a rate quote is a function of the rates, algorithms, and rate factors for the geographic area or territory in which the policy is to be issued. For example, a carrier's basic rate for a certain policy may be \$100

which then gets multiplied by a factor of 1.1 for a given geographic territory to produce a final rate quote of \$110.

The ability to generate useful quotes is, of course, dependent on the sufficiency and accuracy of the user's inputs. Therefore, a question help tool 266 is used by the rating analyst to 5 enter help text for each question to be included in the WUI screen displays. A violations tool 267 is used for auto, motorcycle, and boat rate products, to specify the accidents and violations that the insurance carrier tracks for the purpose of rating each insured driver/operator. In the preferred embodiment, a specific violation code (SVC) mapping tool 268 is used to map standard violation codes, accessed via ChoicePoint Inc., to company specific violation codes for auto, 10 motorcycle and boat rate products. An unacceptable vehicle tool 269 allows a rating analyst to specify the make and model of each vehicle that each insurance carrier does not insure for auto, motorcycle, and boat rate products. The information entered via tools 267-269 is also used in calculating rates, for the appropriate types of policies.

As will be appreciated by those skilled in the art, various development tools may be 15 defined which embody the basic functionality (or modifications thereto) of the development tools described herein without departing from the spirit and scope of the present invention. The tools described herein are intended to be illustrative and not exhaustive.

b. 3<sup>rd</sup> Party Interfaces 250

Third party interfaces 250 include interfaces to a variety of entities and services useful in 20 automating the transaction processing of the insurance processing system 200. More specifically, the third party interfaces are responsible for retrieving underwriting verification data from industry specific service bureaus, transferring policy data to carriers, and importing data to system Framework databases from carriers for the purpose of billing and claims inquiry. Such third parties also include banks (as shown in Figure 6) and credit card companies, as well as 25 other financial institutions, accessed for electronic fund transfers, payroll deductions, credit card charges and so on to pay premiums and other insurance related expenses or to issue refunds or pay outs. Third parties may also provide financial information. For example, the system may interface with First Data, Inc. for real-time credit card authorizations. As another example, the system may include interfaces to state or federal agencies having information relevant to the 30 insurability of a client, perhaps criminal or motor vehicle database information. One example of a commercially available database interfaced by the preferred embodiment of the insurance transaction processing system 200 is provided by ChoicePoint, Inc., which provides real-time access to motor vehicle registry data for about thirty states, presently, and also provides credit

history as well as claim history information for automobiles and personal property. Another database interfaced by the system is made available by Trans Union Inc., which provides individuals' credit scores. To obtain such data, the WUI server of the present invention provides a "COM" object over the network to relevant third parties, wherein the object includes built-in methods used to request information from the data and service providers to which they link. It is envisioned that such third party information would become increasingly available and that the present invention incorporates interfaces to such increasingly available databases and sources.

#### IV. Architecture

Figure 6 shows a preferred architecture 600 which implements the insurance processing system 200 shown in Figures 2A and 2B. The server topology is configured as two networks. A first network 605 is routed to external networks for user access, and a second network 610 is a non-routed internal network for database access. The front-end WUI servers 232a-c are multi-homed with one network interface to the routed network 605, and a second network interface to the non-routed, back-end SQL server network 610. All Framework data are maintained in back-end dedicated SQL servers 620 and 630a-b that are single-homed, not routed. The third party interface server 650 runs system custom software to access 3<sup>rd</sup> party data sources 655 linked to the database network 610.

The front-end WUI servers may be duplicated as required for scalability, and are clustered for high availability, preferably using a "cluster CATS" solution from Allaire, Inc.. The back-end SQL servers are also clustered and all systems run with mirrored hot swapable drives and redundant power supplies, for high availability and fault protection. The Framework includes a collection of individual SQL server databases that may be run on multiple separate computers, as load balancing demands. Load is distributed among these sources based on user logon and therefore may be grouped in logical units, such as all agents in one or more states. The databases shown in Figure 6 depict a physical implementation of the static and dynamic databases of Figure 2B. Wherein, temporary databases 624, 636a and 636b correspond to dynamic database 245 of Figure 2B and the remaining databases of Figure 6 correspond to static databases 255 and 265 of Figure 2B.

With more specific regard to the preferred embodiment shown in Figure 6, each WUI server 232a-c is actually a cluster of individual servers, with each WUI server supporting one database server. Generally, each WUI server cluster is paired with a database server and typically designated for a specific type of user, but this need not always be the case. For example, WUI server cluster 232a is designated for general management application serving, that

is, it is not designated to any specific type of user (see discussion related to workstations 202, 204, and 208 in Figure 2A). WUI server 232b is designated for call center rating and WUI server 232c is designated for agency rating (see discussion related to workstations 210 and 212 in Figure 2A). Those skilled in the art will realize that either more or less WUI servers 232 could 5 be included in the architecture 600 and dedicated to one or more sub-groups of users in a variety of configurations.

A plurality of rate product servers 630a-b are included within the architecture and are accessed by their associated WUI servers 232a-b respectively. While only two rate product (i.e., "QUOTE Services") servers are shown in Figure 6, there can be any number of rate product 10 servers, wherein a rate product server can be associated with a given state, carrier, or line of business. Each rate product server 630a and 630b includes a corresponding general database management Framework 632a and 632b, respectively, including a series of general utilities and information 634a and 634b used by the server to assist in the generation of rate quotes. Also included with each server as part of the Framework is a temporary data storage area 636a and 15 636b, each of which is used as a repository for data while the rate quote is being prepared. Information that may be stored in such an area includes client profile information and candidate policy information. Once a candidate policy is chosen (i.e., a preferred policy) and a policy is issued, that policy is stored in a permanent (or long term) memory location, such as database 265 of Figure 2B.

20 The architecture of Figure 6 also includes a report application server 640 which hosts a variety of applications for producing reports used in the general monitoring and maintenance of the system and for analyzing carrier and agent related information including client account information. Additionally, there is a third party interface server 650 which is used, for example, by the billing engine 242 and underwriting engine 238 of the Core. As an example, the billing 25 engine may use the third party interface server to exchange information necessary to conduct electronic fund transfers with a bank or between banks 655, or among other financial institutions. The third party interface 650 is also used to access data from information providers during the underwriting and rate quote process to verify or obtain client profile information, depending on the availability of on-line resources.

30 The system is maintained on a single set of servers, preferably, and delivered via an IP connection and a browser. Consequently, maintenance and software version control is greatly simplified. For example, when a carrier issues a modified set of rates or underwriting rules, the new rates are entered into the system "development" area, then moved to a "staging area" for

Quality Assurance (QA) review, and ultimately released to the production servers where they then become available for use by agents, clients, and so on. The development area refers to an off-line development environment where manipulation, formatting, and testing of code is accomplished, as needed, using system tools as preparation for releasing the new rates and/or

5 rules as software code to the production system 200. Once the development team is satisfied that such code is ready for release, the code is moved to the staging area which models the production system, and QA provides verification of the code's readiness. Because a single set of servers is used, release to production by QA accomplishes a simultaneous upgrade for all users.

Additionally, the reliance on commonly available and standard computers and interfaces (e.g.,

10 Windows NT servers, SQL server databases, Web browser interfaces, and so on) and the ability to seamlessly add additional servers to support additional users results in an architecture with relatively unlimited scalability.

The invention may be embodied in other specific forms without departing from the spirit or central characteristics thereof. The present embodiments are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by appending claims rather than by the foregoing description, and all changes that come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

CLAIMS

1. 1. An insurance transaction system for processing transactions related to new or existing insurance policies across a remote communication network by a user, the insurance transaction system comprising:
  4. A. at least one computer workstation having a display screen and an input device, by which the user interacts with said insurance transaction system;
  5. B. at least one database having insurance rating information and underwriting rules stored therein for a plurality of insurance carriers;
  6. C. an application server, including:
    9. I. an application interface, which generates initial and subsequent prompts at said workstation for the user to input client data associated with a specific client, wherein said subsequent prompts are dynamically generated as a function of previous client data inputs at said workstation;
    10. ii. a quote generator which, as a function of said client data inputs, said rating information, and said underwriting rules, generates data representations, including rate quotes, of one or more candidate policies of a selected insurance product type from the plurality of insurance carriers;
    11. iii. a display generator which displays at the display screen said candidate policies for comparison, if more than one candidate policy has been generated by said quote generator, and selection of a preferred policy from said one or more candidate policies by said user using the input device;
    12. iv. a policy issuer which, as a function of the user's selection of a preferred policy, establishes in said database an issued policy corresponding to said preferred policy and correlated to said client; and
    13. v. a billing generator which generates and stores in said database an electronic billing schedule corresponding to said issued policy; and
  26. d. a communication network which interconnects said workstation with said application server and said database.
1. 2. The insurance transaction system of claim 1 wherein the database includes rating information and underwriting rules for at least one other type of insurance product and the quote generator includes a companion quote generator which, as a function of said

4 client data inputs and said rating information and underwriting rules for at least one other  
5 type of insurance product, generates data representations of one or more candidate  
6 companion policies from the plurality of carriers.

1 3. The insurance transaction system of claim 1 wherein the communication network  
2 includes the Internet.

1 4. The insurance transaction system of claim 1 wherein the communication network  
2 includes the World Wide Web.

1 5. The insurance transaction system of claim 1 wherein the communication network  
2 includes at least an extra-net or an intra-net.

1 6. The insurance transaction system of claim 1, wherein the application server further  
2 includes:

3 vi. a payment processor which accepts electronic funds transfer information  
4 input at said workstation, including a payment amount to be transferred  
5 from an identified financial account associated with said client and client  
6 policy identification information which identifies a policy to which the  
7 payment is to be applied; and

8 vii. a bill updater which applies the payment amount to a balance of the  
9 identified policy and recalculates the balance and generates a revised  
10 billing schedule as a function of the application of said payment amount.

1 7. The insurance transaction system of claim 6, wherein the said electronic funds transfer is  
2 of the type from the group comprising payroll deduction, direct payment, and electronic  
3 bill payment.

1 8. The insurance transaction system of claim 1, wherein the application server further  
2 includes:

3 vi. a payment processor which accepts credit card information input at said  
4 workstation, including a payment amount to be credited from an identified  
5 credit card account associated with said client and client policy

6 identification information which identifies the policy to which the  
7 payment is to be applied; and  
8       vii. a bill updater which applies the payment amount to a balance of the  
9 identified policy and recalculates the balance and generates a revised  
10 billing schedule as a function of the application of said payment amount.

1       9. The insurance transaction system of claim 1, wherein a subset of said underwriting rules  
2 and rating information residing on said database relates to each carrier, and said subset is  
3 accessible and maintainable independently by the carrier to which the subset corresponds  
4 and across the computer network.

1       10. The insurance transaction system of claim 1, wherein the system is adapted for the  
2 processing of an insurance claim in accordance with a client's existing policy issued by an  
3 insurance carrier and stored in said database, wherein a subject matter of said claim  
4 identifies the situation to be remedied or damage to be repaired under said claim, and the  
5 database includes information corresponding to a set of preferred providers for providing  
6 services related to remedying said situation or repairing said damage and a set of  
7 insurance adjusters for assessing the monetary claim value associated with said remedy or  
8 repair under said policy, wherein the application server includes:

9       vi. a claims input interface, which generates prompts at said workstation for  
10 the input of client claim data, including the subject matter of said claim  
11 and identification of the client's existing policy in said database;  
12       vii. an adjuster assigner, which assigns an insurance adjuster to said claim, the  
13 assignment being a function of a set of predefined adjuster criteria stored  
14 in said database and said claim data; and  
15       viii. a provider assigner, which assigns at least one preferred provider from said  
16 set of preferred providers to said claim, the assignment being a function of  
17 a set of predefined provider criteria stored in said database and said claim  
18 data.

1       11. The insurance transaction system of claim 10, wherein the application server further  
2 includes:

3       ix. a claim payment processor which electronically transfers a payment

amount derived from said claim value from a carrier financial account of said insurance carrier to a preferred provider financial account of said preferred provider.

- 1 12. The insurance transaction processing system of claim 1, further including:
  - 2 e. a framework database system which includes said at least one database as a
  - 3 substantially static database.
- 1 13. The insurance transaction processing system of claim 12, wherein said framework
- 2 database system includes objectized extensible databases.
- 1 14. The insurance transaction processing system of claim 12, wherein said framework
- 2 database system includes at least one dynamic database for storage of transactional data,
- 3 said transactional data including session oriented data comprising at least said client data
- 4 and said candidate policies.
- 1 15. The insurance transaction system of Claim 1, further including an implementor's system
- 2 comprised of a workstation and a plurality of development tools usable to create at least a
- 3 portion of said application interface and to enter and store in said database said insurance
- 4 rating information and underwriting rules from a graphical user interface, wherein each
- 5 development tool includes program code stored and executable on said workstation.
- 1 16. The insurance transaction system of claim 15, wherein said application interface is
- 2 comprised of a plurality of display screens and said development tools include a web user
- 3 interface tool configured to layout said display screens and generate corresponding
- 4 program code and wherein said display screens include said application interface initial
- 5 and subsequent prompts.
- 1 17. The insurance transaction system of claim 16 wherein the display screens are pages which
- 2 are segmented into one or more sections, and wherein each section may include one or
- 3 more questions and each question may include one or more options.
- 1 18. The insurance transaction system of claim 17, wherein said development tools include a

2 question help tool configured to enter and associate with each question explanatory help  
3 text to facilitate a user's accurate input of said client data.

1 19. The insurance transaction system of claim 15, wherein said rating information includes  
2 rates, rate formulas, and rate procedures and said development tools include a rating tool  
3 configured to enter and store in said database, for each product or policy of each  
4 insurance carrier, said rates, rate formulas, and rate procedures and selectively create  
5 associations between at least a portion of said rating information and said application  
6 interface initial and subsequent prompts.

1 20. The insurance transaction system of claim 15, wherein said development tools include an  
2 underwriting tool configured to enter and store in said database, for a given carrier, said  
3 underwriting rules as logical formulas.

1 21. The insurance transaction system of claim 15, wherein said development tools include a  
2 territory tool configured to associate one or more pre-existing insurance carrier territory  
3 codes, as part of said rating information, with one or more geographic Zip codes, wherein  
4 a territory code is indicative of the degree of risk associated with offering a given policy  
5 in a given geographical area.

1 22. The insurance transaction system of claim 15, wherein said development tools include a  
2 violations tool configured, for auto, motorcycle, or boat insurance policies offered by a  
3 given carrier, to define and enter into the insurance transaction system one or more types  
4 of accidents and violations tracked by said carrier for the purpose of generating said rate  
5 quotes.

1 23. The insurance transaction system of claim 15 wherein said insurance transaction system  
2 is capable of accessing, via said communication network, a third party violations database  
3 system having predetermined third party violation codes, and said development tools  
4 include a specific violation code mapping tool configured to map said third party  
5 violation codes to carrier specific violation codes in said database, for auto, motorcycle,  
6 or boat insurance policies offered by each carrier.

1 24. The insurance transaction system of claim 15, wherein said development tools include an  
2 unacceptable vehicles tool configured to define, as part of said rating information, for  
3 each insurance carrier, the make and model of each auto, motorcycle, and boat not  
4 insurable by said insurance carrier, for each auto, motorcycle, or boat insurance policies  
5 offered by said insurance carrier.

1 25. A method for processing insurance transactions within an insurance transaction system  
2 having at least one workstation including a display screen and an input device, at least  
3 one database, and at least one application server interconnected via a communications  
4 network, wherein the database includes rating information and underwriting rules from a  
5 plurality of insurance carriers, the method including the steps of:  
6 A. prompting a user to select at said workstation a type of transaction from among a  
7 plurality of available transaction types, including:  
8 i. issuing a new policy, wherein a plurality of candidate policies are  
9 generated and displayed for selection of a preferred policy by the user;  
10 ii. effecting a payment related to a policy; and  
11 iii. processing a claim against an existing policy;  
12 B. prompting the user to input at said workstation client data required by the  
13 insurance transaction system for the processing of the selected type of transaction,  
14 wherein subsequent prompts are dynamically generated as a function of the  
15 previously input client data; and  
16 C. processing said selected transaction as a function of said client data and rating  
17 information.

1 26. The method for processing insurance transactions of claim 25 wherein, when the selected  
2 type of transaction involves issuing a new policy of a selected insurance product type,  
3 step C includes:  
4 C-1. generating, as a function of said user inputs, rating information, and  
5 underwriting rules, data representations, including rate quotes, of one or  
6 more candidate policies from the plurality of carriers;  
7 C-2. displaying at said display screen the candidate policies for comparison, if  
8 more than one candidate policy has been generated, and selection of a  
9 preferred policy from said one or more candidate policies by said user





5 and the database further includes information corresponding to a set of preferred  
6 providers for providing services related to remedying said situation or repairing said  
7 damage and a set of insurance adjusters for assessing the monetary claim value associated  
8 with said remedy or repair under said policy, step B includes:

9 B-1. inputting at said workstation client claim data, including the subject matter  
10 of said claim and identification of the client's existing policy; and

11 step C includes:

12 C-1. generating and displaying at said workstation a preferred adjuster list from  
13 said set of preferred adjusters as a function of a set of predefined adjuster  
14 criteria and said claim data;

15 C-2. generating and displaying at said workstation a preferred provider list from  
16 said set of preferred providers to said claim as a function of a set of  
17 predefined provider criteria and said claim data; and

18 C-3. assigning, based on client selection at said workstation, at least one  
19 preferred adjuster from said preferred adjuster list and at least one  
20 preferred provider from said preferred provider list..

1 36. The method for processing insurance transactions of claim 35, wherein step C further  
2 includes:

3 C-4. electronically transferring an amount derived from said claim value from a  
4 carrier financial account of said insurance carrier to a preferred provider  
5 financial account of said preferred provider.

1 37. A method of conducting insurance related transactions over the Internet using an  
2 insurance transaction system, each transaction being part of a session related to a specific  
3 client being serviced by an insurance agent using a workstation, having Internet access, to  
4 input client data and otherwise interact with said insurance transaction system, wherein  
5 said insurance transaction system includes:

6 i. a framework database system which includes and manages at least one  
7 dynamic database for storing session oriented data and at least one static  
8 database for storing at least a set of standard procedures, underwriting  
9 rules, and insurance carrier rate products; and

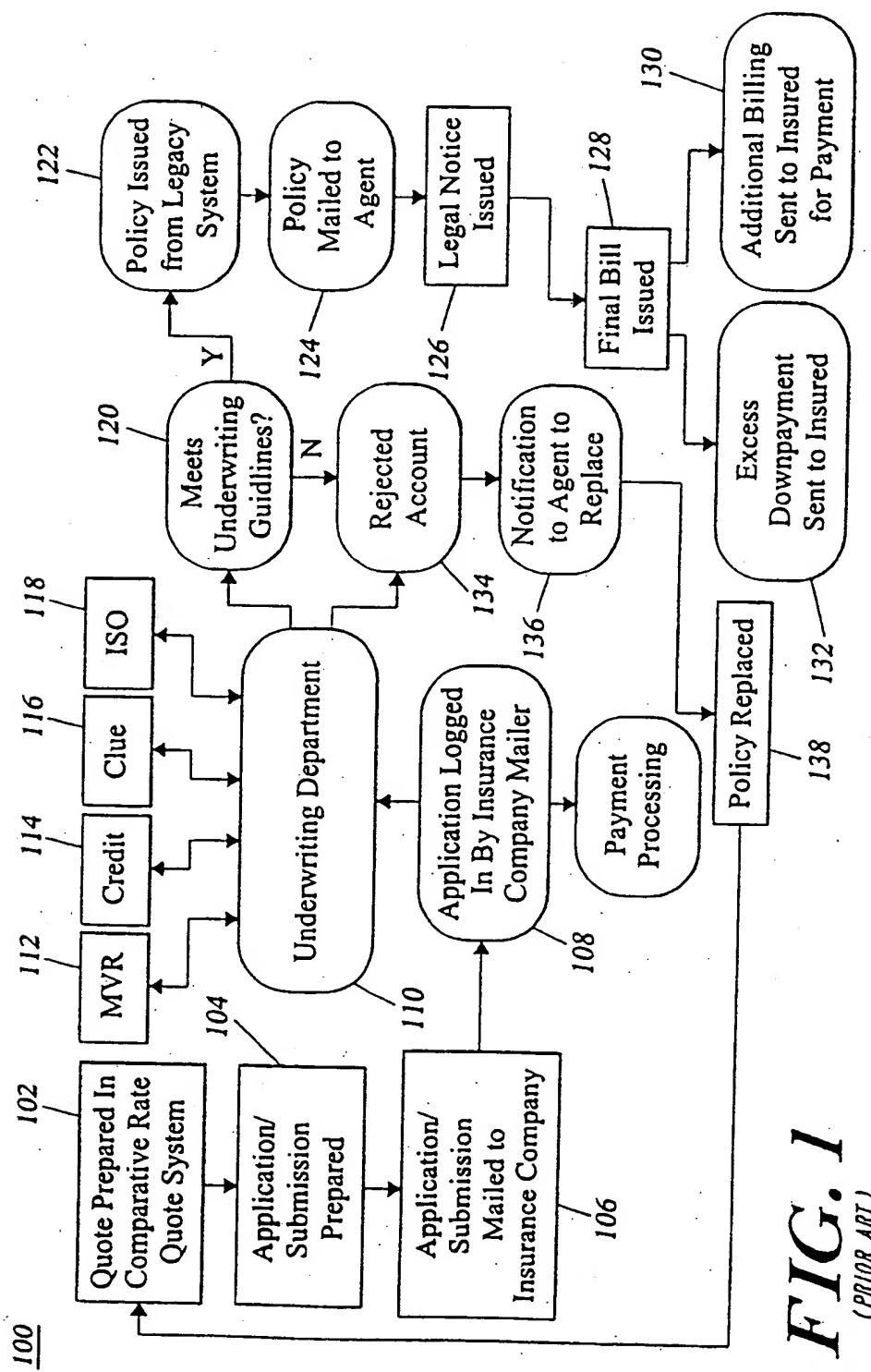
10 ii. a core set of engines and servers, wherein said engines accomplish the

11 processing of said insurance transactions using the data in said framework  
12 database system and wherein at least one server provides an interface  
13 between the Internet and said engines; and  
14 wherein said method includes the steps of:

- 15 A. populating said static databases with said standard procedures, underwriting rules,  
16 and rate products for each of a plurality of insurance carriers;
- 17 B. selectively designating, within said framework database system, at least one  
18 insurance agent having access and privileges to said insurance transaction system  
19 for processing insurance related transactions; and
- 20 C. accessing said insurance transaction system with said workstation and via the  
21 Internet by said insurance agent, inputting said client data, and selectively  
22 processing an insurance related transaction by accessing said core set of engines  
23 and servers.

- 1 38. The method of conducting insurance related transactions of claim 37, wherein said agent  
2 is a franchisee located in a wholesale club.
- 1 39. The method of conducting insurance related transactions of claim 37, wherein said  
2 insurance related transactions include generating a plurality of candidate policies and  
3 corresponding rate quotes for a client as a function of client data input by said agent at  
4 said workstation and related to said client and said standard procedures, underwriting  
5 rules, and rate products.
- 1 40. The method of conducting insurance related transactions of claim 39, wherein said  
2 insurance related transaction includes issuing a preferred policy, selected from said  
3 plurality of candidate policies, and associating said preferred policy with said client in  
4 said framework database management system, and generating a billing schedule  
5 associated with said preferred policy.

- 1 41. The method of conducting insurance related transactions of claim 40, wherein said
- 2 insurance related transaction includes accomplishing a payment of at least a portion of a
- 3 premium associated with said preferred policy, including electronically transferring a
- 4 payment amount from an account associated with said client to an account associated
- 5 with a carrier of said preferred policy.
  
- 1 42. The method of conducting insurance related transactions of claim 37, wherein said client
- 2 data, said plurality of candidate policies, and said rate quotes are session oriented data
- 3 stored in said dynamic database.
  
- 1 43. The method of conducting insurance related transactions of claim 37, wherein said
- 2 insurance related transactions include processing an insurance claim by said agent as a
- 3 function of said input client data and an existing insurance policy issued to said client and
- 4 providing coverage for said claim, wherein an adjuster for evaluating a monetary claim
- 5 value associated with resolving said claim is chosen from a preferred adjuster database in
- 6 said framework database system and a service provider for resolving said claim is chosen
- 7 from a preferred provider database within said framework database system.



**FIG. 1**  
(*PRIOR ART*)

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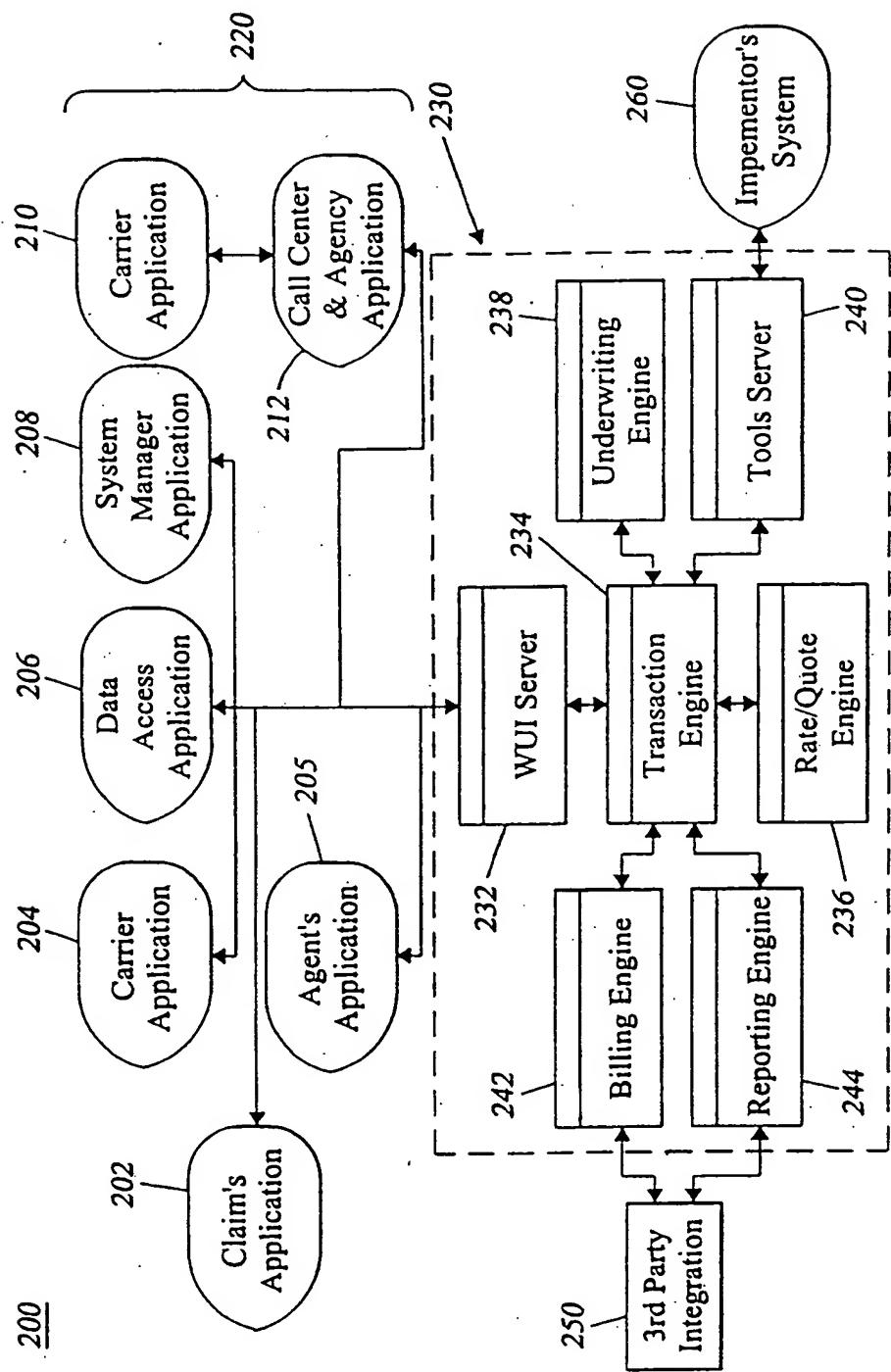


FIG. 2A

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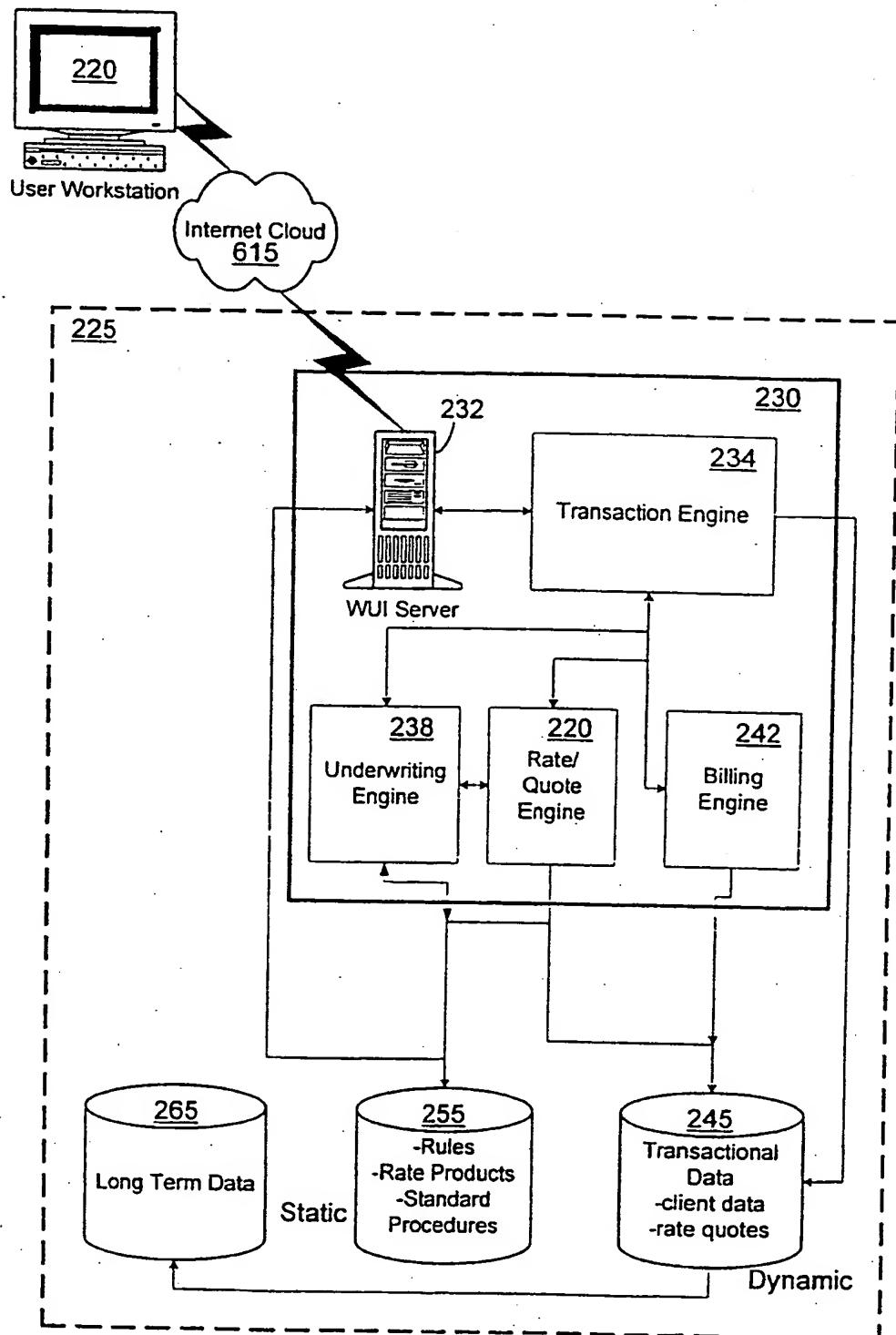
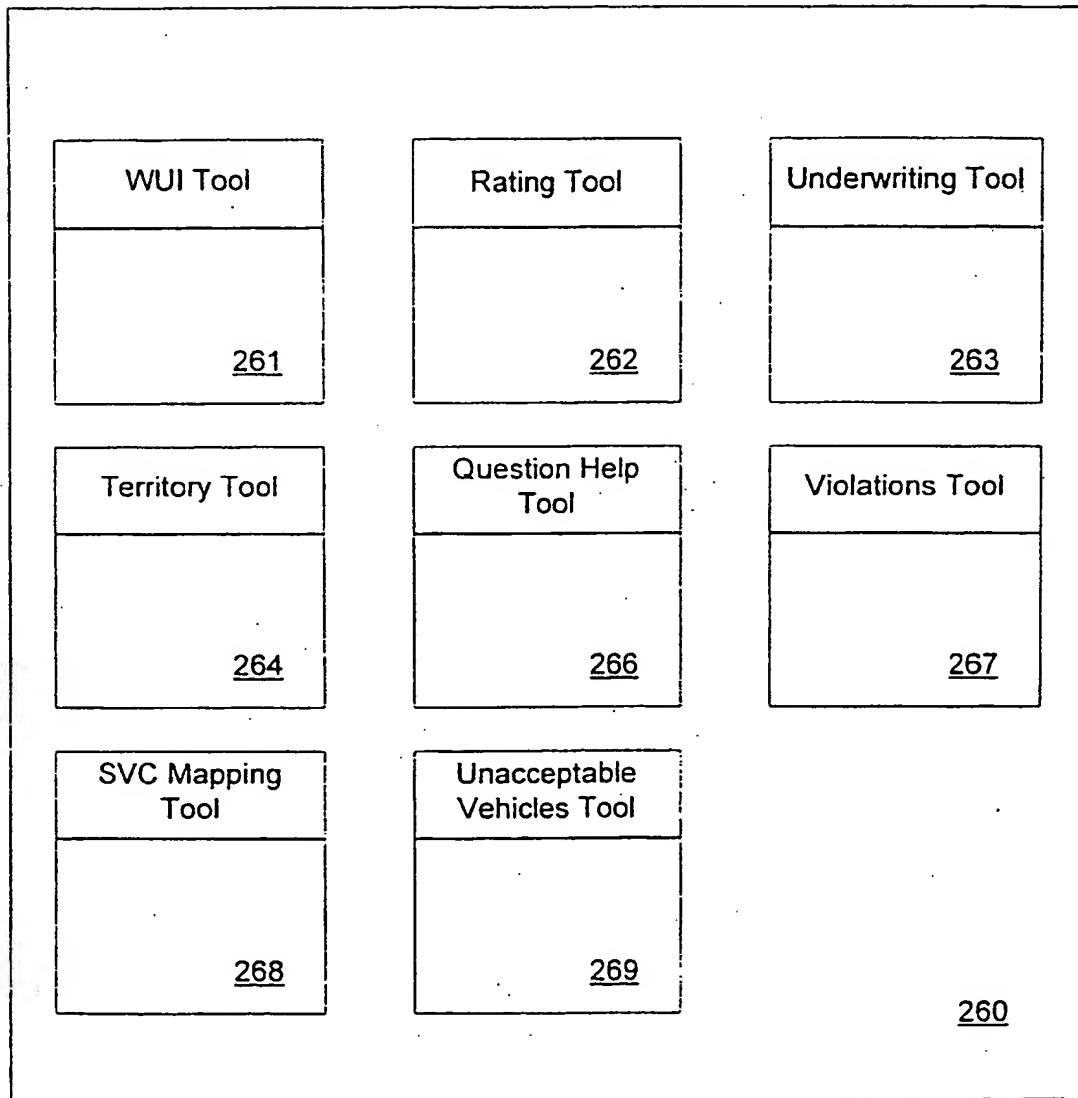


FIG. 2B

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*FIG. 2C*

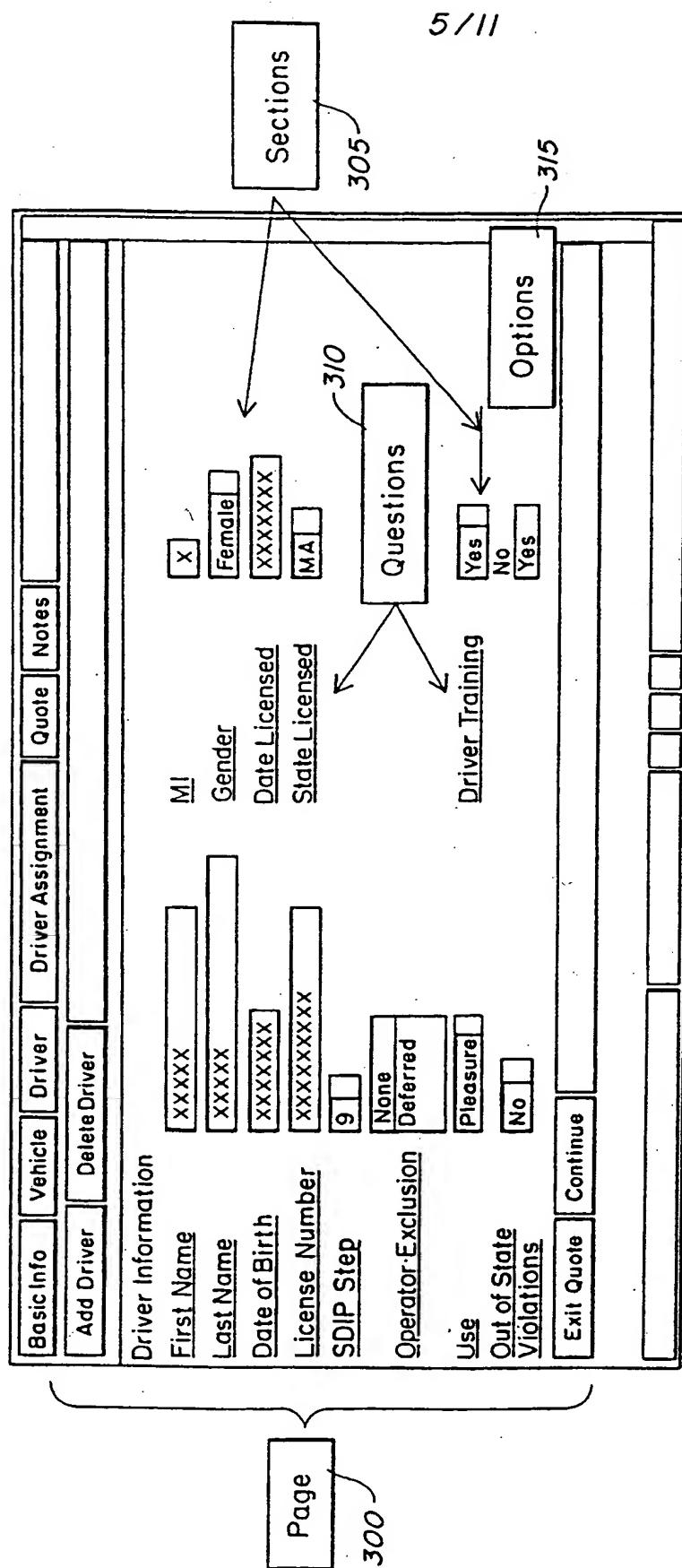


FIG. 3

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Action	Description
Bind	Invoked when the Insurance Center creates a policy that contains temporary billing information. (Policy status is <i>Bind</i> ).
CAN	Cancel Flat - invoked when the policy is cancelled on renewal (e.g. the insured changes carriers on renewal).
CLA	Cancel Lost Account - invoked when a client changes agencies or carriers.
CRW	Cancel Rewrite - invoked when a policy is cancelled due to non-payment, or when the insured chooses a new carrier.
CTE	Cancel Terminate - invoked when the insured is a member of a group (typically an employer group) which terminates its relationship with the insurance carrier.
Endorsement	Invoked when the insured purchases coverages typically excluded from the terms of the policy.
Generate	Generates a billing schedule for a new policy.
Issue	Invoked when the insured purchases a new policy. A down payment had been made.
List	Lists all policies for a specific client.
New	Invoked when a client applies for a policy. A billing schedule is generated and the billing schedule status is set to active.
Pay Bill	Invoked when the insured pays additional cash to an agent, who at the insured's request, applies the additional cash to a specific bill.
Pay Next	Invoked when the insured pays additional cash to an agent, who at the insured's request, applies the additional cash to the insured's next bill.
Preview	Invoked for a policy that contains only temporary billing information; the policy status is left blank.
Rec	Invoked when the insured pays additional cash to the agent and the agent, at the insured's request, applies the additional cash evenly over the remaining length of time of the bill.
Rei	Reinstate - Invoked when the insured reactivates the policy after the cancellation date, but prior to the five-day grace period.
Renewal	Invoked when an agent or Insurance Center employee wants to renew a policy.
Rescind	Invoked when the insured reactivates a policy prior to the cancellation date.
Retrieve	Invoked when an agent or Insurance Center employee wants to retrieve a policy for endorsement or display purposes.
Upload	Invoked for an account that is not billed by Insurance Center/carrier, but by a different Managing General Agent (MGA) who is responsible for the billing.

**FIG. 4**

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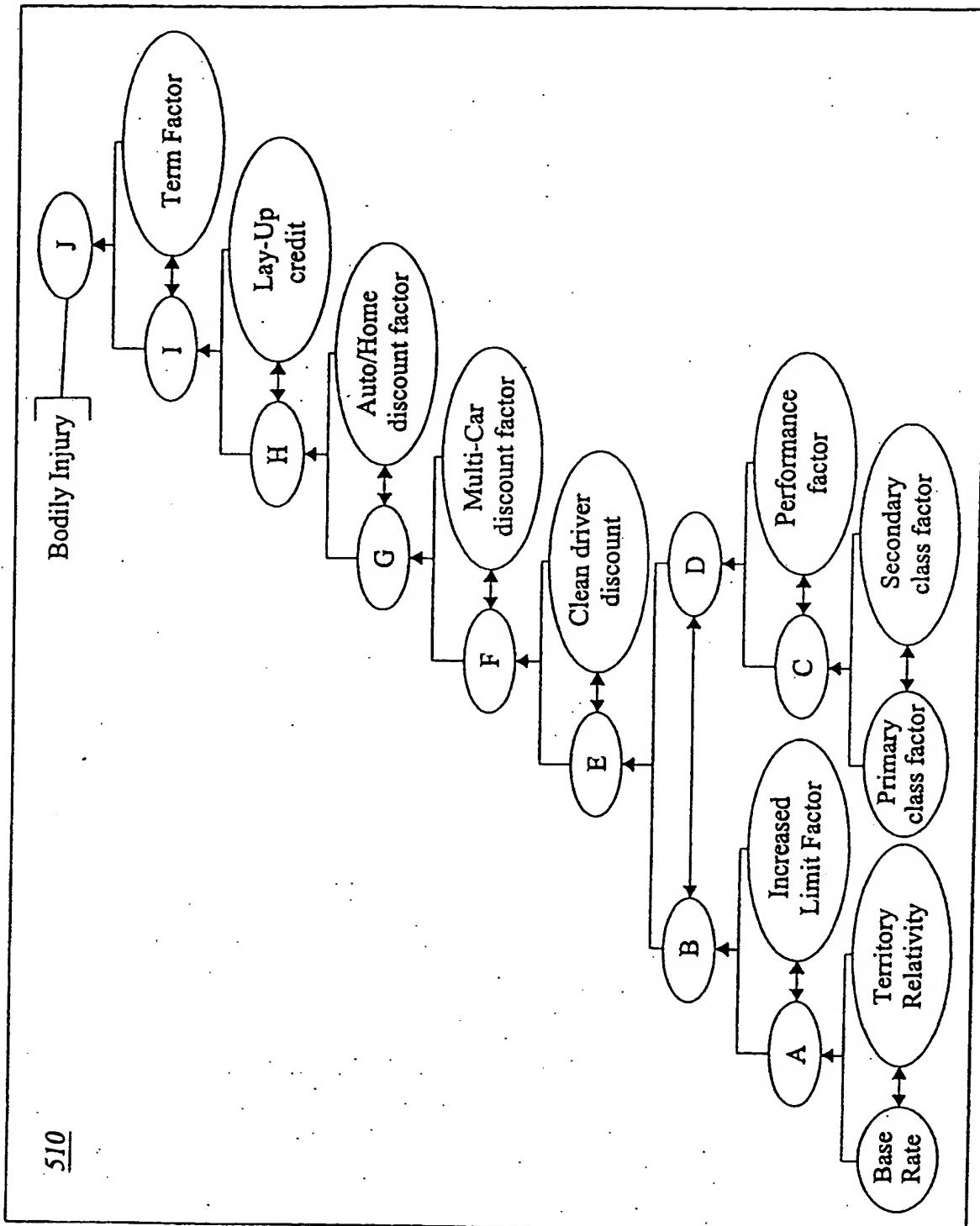
Components of BI			
	Rating Element		Calculation
a.	Base rate	A.	a x b (dollar rounded)
b.	Territory relativity	B.	A + c (if c applies, dollar rounded)
c.	Increased limit factor	C.	d x e.
d.	Primary class factor	D.	C x f (truncated to 3 decimals)
e.	Secondary class factor	E.	B x D (dollar rounded)
f.	Performance factor	F.	E x g (if g applies, dollar rounded)
g.	Clean driver discount	G.	F x h (if h applies, dollar rounded)
h.	Multi-car discount factor	H.	G x i (if i applies, dollar rounded)
i.	Auto/Home discount factor	I.	H x j (if j applies, dollar rounded)
j.	Lay-Up credit	J.	I x k (dollar rounded)
k.	Term factor		

FIG. 5A

Limits and Factors		
Base Rate	Limit	Factor
\$48.52	20/40	0.85
"	25/50	0.90
"	50/100	1.00
"	100/200	1.10
"	100/300	1.15
"	300/300	1.20
"	250/500	1.23
"	300/500	1.25
"	500/500	1.30

FIG. 5D

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FIG.  
5B

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Rate Sequences	
Component	Rate Sequence
Base rate x Territory relativity = A	10
Primary class factor x Secondary class factor = C	10
A x Increased limit factor = B	15
C x Performance factor	20
B x D = E	25
E x Clean driver discount = F	30
F x Multi-car discount factor = G	35
G x Auto/Home factor = H	40
H x Lay-up credit = I	45
I x Term factor = J	60
Perform the same component summation for Property Damage = A1	60
Perform the same component summation for PIP = B1	60
Perform the same component summation for PPI = C1	60
Perform the same component summation for Collision = D1	60
Perform the same component summation for Uninsured Motorist = E1	60
Perform the same component summation for Towing, etc. = F1	60
Add coverages A1 + B1 + C1 + D1 + E1 + F1	70
Sum any other factors/credits	70
Sum all components to derive the total premium	80

*FIG. 5C*

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Elements		
Element	Coverage Choice	Rate Factor
Base rate	N/A	\$48.52
Coverage factor	25/50	0.90
Territory relativity	Territory 5	1.0949
Primary class factor	35 years old/pleasure	0.90
Secondary class factor	1 conviction point/1 at-faults	1.30
Increased limit factor	This is a semi-annual credit	\$12.00
Performance factor	Intermediate performance	1.15
Clean driver discount	None, because there are accidents	1.0
Multi-car discount factor	None	1.0
Auto/Home factor	Has a homeowner's policy	0.95
Lay-up credit	Car is always used	1.0
Term factor	Semi-annual calculations apply	1.0

**FIG. 5E**

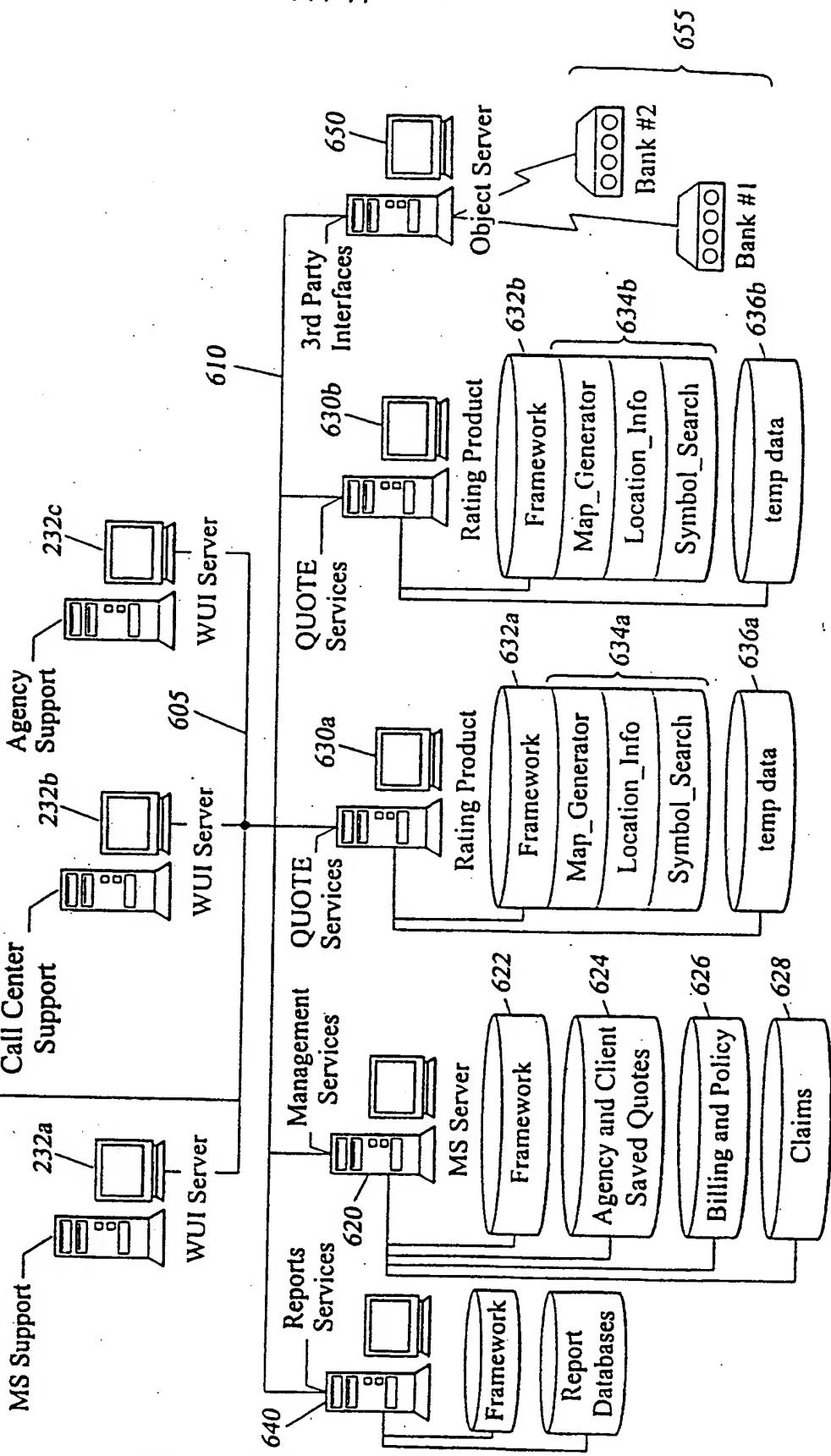
Components			
Component	Rate Sequence	Math	Result
Base rate x Territory relativity = A	10	$48.52 \times 1.0949$	437
Primary class factor x Secondary class factor = C	10	$.9 \times 1.30$	1.17
A + Increased limit factor = B	15	$437 + 12$	449
C x Performance factor = D	20	$1.17 \times 1.15$	2
B x D = E	25	$449 \times 2$	898
E x Clean driver discount = F	30	$898 \times 1$	898
F x Multi-car discount factor = G	35	$898 \times 1$	898
G x Auto/Home factor = H	40	$898 \times .95$	853
H x Lay-up credit = I	45	$853 \times 1$	853
I x Term factor = J	60	$853 \times 1$	853

**FIG. 5F**

**FIG. 6**

600

To External Networks



# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/24004

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 17/60  
US CL : 705/4

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)  
U.S. : 705/4; 717/5; 707/100

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched  
NONE

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
West (US/Derwent/JPO), Dialog (705 Template)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,845,256 A. (PESCITELLI et al.) 01 December 1998 (01.12.1998), abstract, col. 1, lines 21-33; col. 2, lines 51-67; col. 3, lines 1-5, 12-14, 40-44, 64-67; col. 4, lines 1-2, 27-30; Figs. 4A-4I	1, 5, 7-9, 12-21, 25-26, 30-34
Y	EP 0 895 173 A2 (INTERNATIONAL COMPUTERS LTD.) 03 February 1999 (03.02.1999), column 1, lines 5-16, 31-41; column 2, lines 14-22, columns 7-9, lines 10-3; column 14, lines 14-16.	1, 3-5, 15-19, 25-30
Y	Ceres Group, Inc. announces Agreement with HealthAxis.com for Direct Internet Sales of Health Insurance, PR Newswire, December 29, 1998.	1, 3-8, 25, 28-33
Y	Ameritas Life enters e-Commerce with Privident (Ameritas Life Insurance Corp. to Make Its Life Insurance Products Through HealthAxis.com, an Internet-based Subsid of Provident American Corp.). Bestwire, December 29, 1998.	1-8, 25, 28-33
Y	LEWIS, PETER H. Insurers Join a Common Web Site Allowing Consumers to Compare, The New York Times, October 24, 1995, Late Edition - Final, Section D, Page 5, column 1	1, 3-4
Y	CHARTRAND, SABRA. Patents; Software Programs to Help Buyers Make Decisions About Insurance and Health Care Needs, The New York Times, September 8, 1997, Late Edition - Final, section D, page 10, column 1.	1, 3-4

Further documents are listed in the continuation of Box C.

See patent family annex.

Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"E" earlier application or patent published on or after the international filing date	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"&"	document member of the same patent family
"O" document referring to an oral disclosure, use, exhibition or other means		
"P" document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search

13 December 2000 (13.12.2000)

Date of mailing of the international search report

25 JAN 2001

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# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US00/24004

## C (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	HP, Delphi to do Insurance Portal, San Jose Mercury News, August 26, 1999, Morning - Final, Business, page 1C.	1, 3-4, 25, 27-29
Y	HP, Delphi Team on Insurance Portal, Ebix.market Will Let Consumers Define Coverage and Seek Competitive Quotes. Information Week. August 30, 1999, page 178.	1-4, 15-21, 25, 27-29
Y	Quicken InsureMarket Introduces Online Insurance Purchasing. Business Wire. October 2, 1996, page 10021073.	1-9, 12-14, 25-30, 32-33
Y	Internet Access: Intuit Launches Expanded Quicken Financial Network on the Internet; Web Site Now Offers Insurance, Investing and Banking Services, Financial news & Information (company Business and Marketing). Edge: Work-Group Computing Report. June 7, 1996, Vol. 7, No. 318, page 41(1).	1-9, 12-14, 25-30, 32-33
Y	GARDNER, ELIZABETH. Serving the savvy life insurance buyer. (Company Business and Marketing). Internet World. November 9, 1998, Vol. 4, No. 37, page 15(1).	1-5, 9, 25-30
Y	When Atlas Shrugged, InformationWeek, March 9, 1992, page 62.	15-20
Y	LEE, WILLIAM K. Planning Tomorrow's Systems. (Automation Systems for Insurance Companies). Best's Review - Life-Health Insurance Edition. January 1993, Vol. 93, No. 9, page 64(3).	1, 7, 10
Y	HANN, LESLIE WERSTEIN. Off the Shelf Producers Are Finding New Opportunities for Affinity Marketing in Warehouse Clubs and Car Showrooms. Best's Review. February 1999, pages 69-71, especially page 69.	37-42

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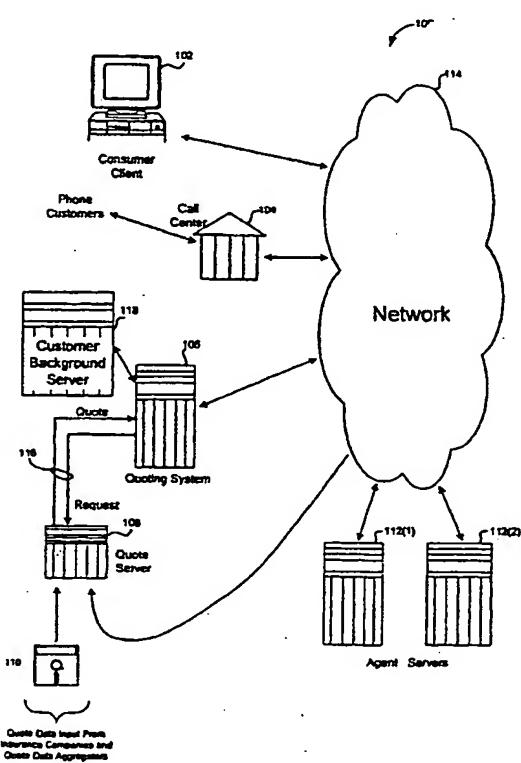
(74) Agents: ALBERT, Philip, H. et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, Eighth Floor, San Francisco, CA 94111-3834 (US).

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[Continued on next page]

(54) Title: ONLINE QUOTATION SYSTEM ALLOWING FOR PARTIAL RESULTS VIEWING AND FULL RESULTS VIEWING



(57) Abstract: A computer system (100) processes and provides quotations of prices to consumers (102) for products or services by storing, in a server cluster coupled to a network (114), a database of quote data (108), wherein the database of quote data (108) includes parameters relating to prices and other offering terms for the products or services being quoted and further includes contact information about an offeror of the products or services, accepting an input of purchaser variables (116), searching the database of quote data (108) to identify products or services with offering terms that match the purchaser variables, generating a list of matched quotes (116), transmitting the list of matched quotes to the potential purchaser (102), prompting the potential purchaser (102) to submit payment for the contact information for some or all of the matched quotes, following the step of transmitting the list of matched quotes and, if the potential purchaser (102) submits payment for the contact information for the matched quotes, transmitting the list of matched quotes and associated contact information to the potential purchaser (102). When the purchaser (102) buys insurance for which contact information is listed, the payment for contact information could be refunded all or in part.

WO 01/11517 A1



patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

— *Before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments.*

**Published:**

— *With international search report.*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## ONLINE QUOTATION SYSTEM ALLOWING FOR PARTIAL RESULTS VIEWING AND FULL RESULTS VIEWING

### BACKGROUND OF THE INVENTION

The present invention relates to an online quotation system in general and 5 in particular to methods and apparatus for generating partial quotations and full quotations, the partial quotations usually being prior to a user paying for the quotations and the full quotations usually being after a user pays for the quotations.

With the increasing use of the Internet, a global internetwork of networks, many services have been developed to provide consumers (potential purchasers) with the 10 ability to shop online to purchase products and services as well as to comparison shop. Some systems even allow potential purchasers to set a bid price for products or services.

Insurance products and services have historically been among the most difficult types of products and services for consumers to shop for and purchase. Consumers have had to contact and/or meet with separate insurance companies and/or 15 agents during normal work hours to compare the policies of different insurance companies. Even worse, consumers have had to provide the same purchasing variables multiple times to multiple insurance providers in order to do policy comparisons. As a result, the majority of consumers give up shopping for the best deal.

One partial solution is provided by services that allow consumers to 20 provide their purchasing variables once and receive policy information from a limited number of insurance companies at no charge. Some of those systems operate over the Internet. The current process for a typical service is inefficient because consumers must individually request policy information on a company-by-company basis and wait for a period of days to receive a significant portion of their policy comparison information by 25 e-mail or regular mail. Moreover, the policy information they receive is often in hard-to-compare formats. In addition, certain of the price quotations received by consumers may not be competitive or otherwise appropriate for particular consumers.

The typical Internet-based purchasing process is also inefficient for 30 insurance providers because the insurance providers are responding to requests for policy information and quotes instead of requests for actual insurance policies. This results in higher costs for many such insurance providers. Also, since consumers are not paying to receive this policy information from these multiple insurance providers, consumers have

much more of an incentive to shop for rather than actually purchase an insurance policy through existing Internet services, much like real estate shoppers that attend open houses and do not purchase.

#### SUMMARY OF THE INVENTION

5        The present invention overcomes several disadvantages of the prior art used to provide quotations for products and services to consumers. In one embodiment, a computer system processes and provides quotations of prices to consumers for products or services by storing, in a server cluster coupled to a network, a database of quote data, wherein the database of quote data includes parameters relating to prices and other  
10      offering terms for the products or services being quoted. The database also includes contact information about an offeror of the products or services, the computer system also provides for accepting an input of purchaser variables, searching the database of quote data to identify products or services with offering terms that match the purchaser variables, generating a list of matched quotes, transmitting the list of matched quotes to  
15      the potential purchaser, prompting the potential purchaser to submit payment for the contact information for some or all of the matched quotes, following the step of transmitting the list of matched quotes and, if the potential purchaser submits payment for the contact information for matched quotes in the list of matched quotes, transmitting the list of matched quotes and associated contact information to the potential purchaser. In  
20      some embodiments, the consumer is charged one fee for all the contact information, but in others the consumer might be charged some nonconstant function of the number of quotes for which contact information is given.

25      In one aspect of a specific insurance purchasing Internet server, the operator of the server maintains a network of agencies, where each member agency can provide insurance products to potential insureds. Using the server, a consumer can engage in insurance transactions with member agencies and the server can facilitate consumer fulfillment. The interaction and fulfillment can occur using the Internet server or by the consumer calling a call center. Preferably, the server and call center are integrated to provide a seamless and fully integrated method for many consumers to  
30      obtain insurance products.

A further understanding of the nature and advantages of the inventions herein may be realized by reference to the remaining portions of the specification and the attached drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

5 Fig. 1 is a diagram of a quotation computer system according to one embodiment of the present invention.

Fig. 2 is a block diagram of portions of the quoting system shown in Fig. 1.

10 Fig. 3 is a block diagram showing the processes and communications between a consumer client computer, a quote server computer and an agent server computer.

Fig. 4 is a flowchart of a process for handling quotation services between a consumer client and a quote server.

15 Fig. 5 is a flowchart of a process of interaction between a consumer client and an agent server for providing a policy following a quote from a quote server.

Fig. 6 is a flowchart of a process for performing a consumer survey.

Fig. 7 is a flowchart of a follow-up process performed by a quote server.

Fig. 8 is a block diagram showing the processes and communications for providing quote data input shown in Figure 1.

20 DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention has many applications, as will be apparent after reading this disclosure. In describing an embodiment of a quotation system according to the present invention, only a few of the possible variations are described. Other applications and variations will be apparent to one of ordinary skill in the art, so the invention should not be construed as narrowly as the examples, but rather in accordance with the appended claims.

30 The quotation computer system described below can be used to facilitate the process of providing, for example, insurance such as automobile, life or home insurance. A potential purchaser of insurance (the consumer) provides a quote server with purchaser variables. Purchaser variables are characteristics of the consumer that would affect the terms of a policy issued to that consumer. For example, if the insurance

is auto insurance, the purchaser variables might include driver name, driver age, driver gender, driver address (including state of residency), make of car, age of car, driving record, desired policy coverage amounts, etc.

Those purchaser variables are used to match against agent/insurer criteria,

5 to identify policies and terms (price, duration, coverage limits, etc.) for policies that the agent/insurer would provide to a policyholder described by the purchaser variables. This matching is done either by the quote server, using quote data provided by the agents or insurers, or by the agent servers. The matching can be done at the agent server, but more typically, the operator of the quoting system maintains a quote server. The quote server

10 operates using data provided by insurance companies or by quote data aggregators.

The potential purchaser is then presented with the list of matching quotes. A typical matching quote would indicate the essential terms of a policy and the premium to be paid. The matching quote might also indicate a customer satisfaction index. However, the list of matching quotes would not include the contact information, such as

15 agent name or insurer name, associated with the quote. Optionally, the quote server might display a logo or an advertisement along with the agent name or insurer name. Such additional information might be displayed in all cases, or just when the agent or insurer requests the additional information be displayed, typically upon payment of a fee.

The customer satisfaction index is a value that represents objective

20 information about the insurer and the agent offering a policy. This information might include the insurer's claims paying record and service ratings as well as the agent's service ratings.

With the quote server operator acting as the consumer's insurance broker, the consumer is prompted by the quote server to compare the premiums and other terms

25 presented by the quote server with each other and with the consumer's current insurance terms, if any. The quote server might provide entry screens where the consumer enters the terms of current insurance, to facilitate the comparison.

If the consumer likes one or more of the quotes, the consumer then pays to see the contact information associated with the quotes on the list. The consumer can then

30 arrange for a policy with a selected agent, or a direct insurer if that insurer does not use agents. If the consumer follows certain procedures, such as binding within a set time period with an agent or direct insurer provided by the quote server operator, the quote server operator might provide a refund of all or a portion of the amount paid for the

quotes, or the agent or direct insurer might discount the premium by the amount paid, pursuant to an agreement with the quoting system operator. The agent or direct insurer agreement might also set out the fees to be paid to the quoting system operator for the referrals.

5        Periodically, the quote server could automatically poll purchasers at random, such as by e-mail, to determine a satisfaction index for an agent or insurer. Also, prior to expiration of a policy, the quote server might automatically send out a prompting message to prompt the consumer to revisit the quote server's Web site and check for more current rates on new policies.

10       The preferred embodiment includes agent filtering, but agent filtering is not a required function of the system. As the use of the quotation system becomes widespread, consumers will recognize the quotation system for its agent filtering. Agent filtering is the process of adding and removing agents based on objective indicia of agent performance. Using agent filtering, if multiple complaints are received from consumers 15       relating to a specific agent, that agent's rating would go down and eventually the agent would be dropped from the contact list. Thus, the agent ratings could be used to direct consumers.

20       On a basic embodiment, the quotes are listed in alphabetical order, in price order or in some other logical order apparent from the quotes themselves. In a variation of the basic embodiment, the quotes are presented in an order based on an agent rating, which might not be apparent or displayed. In such an embodiment, if the consumer selected a policy that could be obtained from more than one agent listed in an agent table, the consumer might be presented with contact information directing the consumer to the top-rated agent. Alternatively, the consumer could be provided with contact information 25       for more than one agent and the ratings for those agents. With such information provided to consumers or used to order information presented to consumers, agents would have additional incentive to ensure that they provide the service necessary to maintain a high agent rating.

30       In a specific embodiment, the total number of agents is limited to ensure that each listed agent receives enough business from the quoting system to remain responsive to consumers using the quoting system.

      A typical computer system for implementing such a quotation system is described below, in reference to the figures.

Fig. 1 is a diagram of a quotation computer system 100, comprising a client 102, a quote server 108, quote data input 110, a quoting system 106, agent servers 112 (two such agent servers, 112(1) and 112(2) are shown) and network 114 used for handling communications among client 102 and servers 108 and 112. It should be  
5 understood that, while in a preferred embodiment network 114 comprises the Internet, other known methods of intercommunication could be used instead, such as a local area network, a wide area network, point-to-point dial-up connections, analog telephone, facsimile, or the like. Quote data input 110 is shown in FIG. 1 as removable media. It should be apparent from this description however that quote data input 110 can be  
10 provided in a number of ways, such as transmission by modem or over a network connection to a file server or the Internet, or by original installation. The quote data can be provided by a quote aggregator or the insurance companies. A call center operation might also be used here, for consumers that have a telephone but not online access.

In the call center operation, a consumer calls a call center operator at the  
15 call center 104. An interactive voice response unit (VRU) explains to the consumer how the call center operation works and indicates the charges to the consumer. The consumer is given an option to proceed and, if the consumer decides to proceed, the VRU requests a credit card or charge card number. The consumer is then charged for the quotes and is connected to a customer service representative, who takes the consumer's purchaser  
20 variables and generates a list of quotes with contact information. Where allowable, the call center might make arrangements with the consumer's telephone company to apply the charges to the consumer's telephone bill rather than use a credit card or charge card.

One advantage to the consumer obtaining online quotes over telephone quotes is that the consumer can view the quotes (without contact information) prior to  
25 deciding whether or not to pay for the quotes.

Client 102 is typically a computer capable of communicating over a TCP/IP (Transport Control Protocol/Internet Protocol) link using HTTP (HyperText Transport Protocol) messages. In a specific embodiment, client 102 includes an HTTP browser and quoting system 106 and agent server(s) 112 include, at least, an HTTP server  
30 or other type of server. Other protocols besides TCP/IP and HTTP can be used instead for communications with client 102.

Quoting system 106 is also coupled to a consumer background server 118. Consumer background server 118 is a computer system for providing consumer

background information, such as driving records, credit records and insurance claims history. Server 118 might be a collection of servers. For example, server 118 might serve credit data maintained by a credit reporting agency, driving record data maintained by a state department of motor vehicles and insurance information maintained by an insurance industry data collector, such as the CLUE insurance information system.

Quoting system 106 can use the information provided by server 118 to select the proper policies and terms to present to the consumer. Quoting system 106 might also provide an additional service to the consumer by allowing the consumer to view the information on that consumer at server 118 (for free, or for a fee) and provide instructions on how the consumer can correct erroneous information. Some quoting systems might allow a consumer to enter corrections directly and take those corrections into account in quoting insurance rates and policies, while others simply refer the consumer to the source of the information.

Another use of server 118 (or the individual information maintainers enveloped by server 118), is for the insurance companies providing insurance. Once the information on a consumer is obtained by quoting system 106, it can be provided or sold to the consumer or to the insurer. Preferably, the insurance company is only provided information for those consumers that have selected that insurance company, however some of the consumer information might be needed before such selection, for example to calculate the prices to present prior to the payment for contact information.

Fig. 2 is a block diagram of portions of the quoting system 106 shown in Fig. 1. Quoting system 106 comprises program code 212 that is executable on processor 210. Program code 212 may contain code for maintaining and processing data stored in session database 214, consumer database 216, products list 218, or agents list 220 and for communicating data to and from quote server 108 via communications path 116.

Agent list 220 contains any contact, rating, and related information necessary or desirable to identify or describe the various local insurance agents associated with quotation computer system 100. Insurance products list 218 contains information regarding the various types of policies available such as auto, fire, life, liability or home or other property/casualty insurance. Consumer database 216 includes at least the necessary information to distinguish one particular potential purchaser from another and may contain precise information about specific quote requests, policies held, purchaser variables or other information.

In one embodiment, consumer database 216 is used by quoting system 106 to determine when follow-up emails or updated quote information need to be sent to a consumer, for example, a birth date stored in consumer database 216 may be used to determine if the consumer has reached a particular age affecting his or her policy. In

5 another embodiment, quoting system 106 utilizes consumer database 216 for accounting purposes between the operator of the quoting system and both the consumers and the agents/insurance providers for reasons such as to provide consumers with discount information or a refund of the payment provided by the consumer for contact information once a matching policy has been purchased.

10 Session database 214 identifies a particular quote request transaction and contains a unique session identifier for each session. Session identifiers provide a means by which the quoting system can manage refunds or discounts for consumers who purchase policies from agents identified in the transmitted contact information as well as to identifying potential purchasers to those agents. Those having skill in the art will

15 appreciate that the session identifiers can be put to other uses and the granularity of the session identifiers may vary depending on their use. For example, session database 214 may be cross-referenced with consumer database 216, products list 218, and agent list 220 to provide detailed information about a particular session, moreover, session IDs may include time stamping so that potential purchasers who did or did not pay for contact

20 information or purchase from an agent provided by the quote system operator may be subsequently solicited by electronic mail or other means.

In addition to communication path 116, quoting system 106 includes various other communications paths providing for the manipulation, storage, and loading of data including communications path 222 coupled to agent list 220, communications path 224 coupled to insurance products list 218, and communications path 226 coupled to consumer database 216. Data may likewise be transferred or edited using input communications path 228 and output communications path 230 coupled to I/O connector 202. I/O connector 202 can accept and transmit data in various formats including but not limited to HTTP and facsimile by means of HTTP server 208, Fax server 206, and Call 25 Center server 204. Although separate servers are illustrated for each individual data format it should be understood that other data formats as well as a single server capable of processing multiple message types may be employed. Input path 228 may accept quote requests from call center 104 and network 114 and may accept other information such as

quote data or consumer survey information. Output path 230 in turn may provide matching quote lists, contact information, and agent messages as shown.

Fig. 3 is a block diagram showing the processes and communications between a consumer client computer, a quote server computer and an agent server computer. A consumer client within the system 300 first initiates a quote session when a quote request is issued. The session begins and a session identifier may be created upon receipt of the quote request within the quoting system 302. The quoting system may then reply to the request by preparing and transmitting a set of questions for the consumer regarding the insurance product desired, consumer information and preferences 304. These questions may then in turn be conveyed to the consumer by visual means such displaying them in a browser format or by audio or other means 306.

Answers to the transmitted questions can be transmitted by the consumer and accepted by the quoting system so that consumer (purchaser) variables can be generated therefrom 308. It should be noted that the generation of questions and the receipt of answers may only be necessary when a consumer initially begins to use the quoting system or when updated information is required and that otherwise previously acquired and stored data may be used. However derived, the consumer variables are then transmitted to the quote server 310 which attempts to match the transmitted variables with quote data stored in its associated quote database 312. Any quote lists identifying matching quote data determined by the quote server are then forwarded to the consumer for review 314 and the consumer is prompted for payment to contact information associated with the transmitted quote lists 316.

The quoting system next determines if consumer desires to remit payment for the desired contact information 318. In one embodiment, the receipt of a valid credit card or electronic currency identifier is used for this determination. If the consumer desires to remit payment and receive contact information associated with the previously transmitted quote list it is prepared by the quoting system 322 and transmitted to the consumer 326. To identify the completed 324 or discontinued 320 transaction, the previously generated session number is saved.

It may thereafter be determined whether the consumer desires to use the provided contact information to purchase a product or policy from an agent identified in the transmitted list 328. At this point, the consumer may contact the agent directly or may desire that the agent or agents contact them regarding the desired policy. The

quoting system may then use the stored agent's contact information 332 to provide the consumer data and variables to the agent server desired 340 and may also provide a refund of the consumer's remitted payment 334. The consumer can then be notified of the refund 336 and the transaction completed 338. Session data would be recorded by the 5 quoting system on any discontinued transactions 330 which could then be used by the quoting system, for example, to verify that a refund was appropriate if the consumer subsequently decided to use one of the quoting system listed agents.

Fig. 4 is a flowchart of a process for handling quotation services between a consumer client and a quote server. The process is initiated 400 and the consumer 10 information or identifier is accepted 402. A determination is then made based upon the accepted information whether the requesting consumer has previously requested information from the quote server 404. Existing customers may have their consumer variables updated 406, and new customers may provide their purchaser variables to provide quote data. In one embodiment, existing customers would be able to expedite the 15 process by providing only that information requiring update or by communicating that no updates are required. It should be noted that although the use of a question and answer type form is depicted that alternative means of providing consumer data are also acceptable. User preferences and information may be stored within consumer client and uploaded to the quoting system described for comparison with existing consumer 20 information or use.

A quote list containing information related to quotes matching the transmitted consumer variables is then obtained from the quote server 410 and presented to the potential purchaser without contact information for insurers and/or agents associated with each matching quote 412. If the consumer is willing to purchase the 25 withheld contact information, and payment is verified, the contact information associated with the transmitted matching quotes is delivered to the purchaser 420. If the consumer then selects one of the provided agents to purchase a product or service from the session data is transmitted to the selected agent. The transmitted session data may be used to identify what quote information was provided as well as to simplify contact and 30 verification of the potential purchaser. In the event the potential customer either does not wish to purchase contact information related to the transmitted quote data or does not select one of the provided agents, the session data is stored so that the discontinued transaction may be resumed. A consumer can resume a session by entering enough

information to allow quote server 410 to match up the consumer with saved session data, or passwords could be used to match consumers with saved session data.

Fig. 5 is a flowchart of a process of interaction between a consumer client and an agent server for providing a policy following a quote from a quote server. To 5 identify the consumer and the quote data provided a session identifier is first transmitted to a selected agent server 502. The selected agent server can then determine if the quote data is accurate or if it needs to be supplemented or corrected to produce a finished quote 504 which is then provided to the potential purchaser 506. At this point the potential purchaser may review the finished quote to determine if its terms are acceptable or if 10 coverage is still desired 508. The consumer may either decline to purchase coverage, in which case the quote server is notified that no policy has been issued, or accept the finished quote.

The agent may then bind coverage (provide a binder) 510 and a premium is collected 511. The policy is then issued to the purchaser 512 and the quote server is 15 provided with information relating to the granted policy including the date coverage begins, the required premiums and the coverage provided 518. The premium can be collected in several ways. The agent can collect the premium from the consumer and then pass it on to the insurance company. However, it might be more efficient and secure for the premiums to be collected by the quotation computer system operator (subject to the 20 operator being a licensed broker and otherwise complying with regulations surrounding premium collection). The collected premiums can then be aggregated and credited to the insurance companies providing the coverage.

Fig. 6 is a flowchart of a process for performing a consumer survey. Consumer surveys may be provided to consumers for completion to improve the services 25 provided as well as to rate and filter the associated agents to maintain quality service within the quote system described herein. In a preferred embodiment, consumer surveys are issued solely to consumers who hold policies with system-associated agents. Surveys may likewise be submitted to consumers who have paid to receive contact information but who failed to use it, or who viewed quote lists of matching quotes but who declined to 30 purchase contact information however. After issuing a consumer survey 602, the quote server will read and store any information obtained from any completed surveys 608 and note and record any issued surveys not completed 610.

Fig. 7 is a flowchart of a follow-up process performed by a quote server. In response to a determination that follow-up with an existing client is necessary 702, updated purchaser variable information is obtained 704 and new matching quote data is generated, sent 706 and received by the consumer client 708. It will be appreciated that 5 the follow-up determination itself be in response to a predefined event, such as the passing of an amount of time for selected existing consumers.

Fig. 8 is a block diagram showing the processes and communications for providing quote data input shown in Figure 1. Although a third party data aggregator is depicted, it should be appreciated that other sources of quote data may be employed, such 10 as a local aggregation performed by the operator of the quotation computer system. A third party, quote data aggregator, 800 is shown receiving as inputs insurance quote rules 803 (two such quote rules, 803(1) and 803(2) are shown). Insurance quote rules 803 comprise a collection of methods and formulas for generating quote data based upon variables such as age, occupation, marital status, type of vehicle and driving record.

15 Quote rules may be generally applicable to various types or categories of coverage or specific depending on the type of coverage sought. Similarly, some insurance products may require specific variables in order to generate quote data using the associated rules 803. The rules shown may also be from the same or different insurance providers. Quote aggregator 800 compiles various insurance quote rules into aggregate database 802.

20 Quote server 108 may then access aggregate database 802 to generate and provide quote data.

In summary, a computer system has been described that allows for comparative shopping for products and services. One category of products is financial services products, such as auto, fire, life, liability or home or other property/casualty 25 insurance. When used as an insurance-providing computer system, the system couples agent servers, each associated with a particular agent selling insurance. In some cases, the agents are assigned exclusivity based on purchaser variables, such as the geographic location of the consumer, but that is not required. Preferably, only one agent is connected to a given consumer for a given policy. The agent servers (and their associated agents) 30 are included and excluded from the computer system as determined by the operator of the computer system. For example, an agent that fails to meet minimum service level requirements might be disconnected from the system. For some agents, the agent server

is nothing more than a facsimile machine that receives the consumer information from the quoting system.

For agent servers that remain connected, the agent servers are provided with all or part of the set of purchaser variables (the quote server could opt to withhold some variables). In an alternate embodiment, the agents (or insurance companies) provide the quote data in bulk to the quote server operator so that quotes can be generated without contacting the agent server for each quote. However, if a consumer decides to follow through with one agent, that agent's server will receive all the purchaser variables that are needed to bind a policy and that are available at the quote server.

Customer follow-up can also be performed by the quote server, to provide assurances that customers are receiving an acceptable level of customer service. One mechanism for customer service measurement is sending e-mailed customer surveys based on purchaser variables, such as date of policy purchase and consumer e-mail address.

The customer survey might serve as a trigger to send a refund of the quote fees paid to obtain quotes. The initial quotes provided to a potential purchaser provide policy terms, policy premiums, satisfaction ratings for the agents and insurers, and general information about the insurer(s), but do not disclose contact information, such as the name of the agent or the insurer. The customer will then be able to compare the rates and other information to the customer's current policy before deciding whether or not to pay for the contact information. If the customer requests the contact information, the customer is charged a refundable service fee and shown the contact information. If the customer uses the computer system's agent network to purchase a policy, the service fee is refunded to the customer, either directly from the quote system operator (who is then paid by the agent/insurer) or as a discount on the policy premiums (where allowed by law).

At predetermined intervals, the quote server will automatically send out prompts to purchasers prompting the purchaser to reconsider a policy. Other events, such as a change of address, change of driver age, change of vehicle or the like, might also trigger a prompt to reconsider. The purchaser might opt to limit the prompts only to cases where a change in premium would be more than a set amount of money or a set percentage savings over a current policy.

A method and apparatus for creating a seamless insurance system is disclosed above. With such a method or apparatus, consumers can shop for insurance products and the policies can be fulfilled in an integrated manner so that consumers can shop and obtain insurance more easily, with the quoting system operator acting as the 5 consumer's broker.

The above description is illustrative and not restrictive. Many variations of the invention will become apparent to those of skill in the art upon review of this disclosure. For example, the quotation server system for use in insurance sales is described in great detail. However, the quotation server system could also be used to 10 provide automobile quotes, commodity consumer goods quotes, mortgage and home loan quotes, travel-related quotes (airlines, hotels, auto rentals, cruises), and the like. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the appended claims along with their full scope of equivalents.

WE CLAIM:

1. In a computer system for processing and providing quotations of prices to consumers for products or services, a method of providing a potential purchaser of the products or services with a quotation for the products or services, a method comprising the steps of:
  - 5     storing, in a server cluster coupled to a network, a database of quote data, wherein the database of quote data includes parameters relating to prices and other offering terms for the products or services being quoted and further includes contact information about an offeror of the products or services;
  - 10    accepting, at a quote server, an input of purchaser variables;
  - 15    searching the database of quote data to identify products or services with offering terms that match the purchaser variables;
  - 20    generating a list of matched quotes;
  - 25    transmitting the list of matched quotes to the potential purchaser;
  - 30    prompting the potential purchaser to submit payment for the contact information for one or more of the matched quotes, following the step of transmitting the list of matched quotes;
  - 35    if the potential purchaser submits payment for the contact information for one or more of the matched quotes, transmitting the list of matched quotes and associated contact information to the potential purchaser.
2. The method of claim 1, wherein the product is insurance and the purchaser variables are characteristics of the purchaser of insurance that affect at least one term of an insurance policy that an agent or insurance company could issue to a purchaser with those characteristics.
3. The method of claim 1, wherein the step of prompting the potential purchaser to submit payment is a step of requesting a form of payment.
4. The method of claim 1, wherein the step prompting the potential purchaser to submit payment is a step of requesting credit card identifiers.
5. The method of claim 1, further comprising the steps of:
  - 40    arranging for purchase of a quoted product or service; and

refunding to the consumer all or a portion of the payment for contact information upon the consumer's purchase of the quoted product or service.

6. The method of claim 1, wherein the quote data includes a set of rules used to identify products and services.

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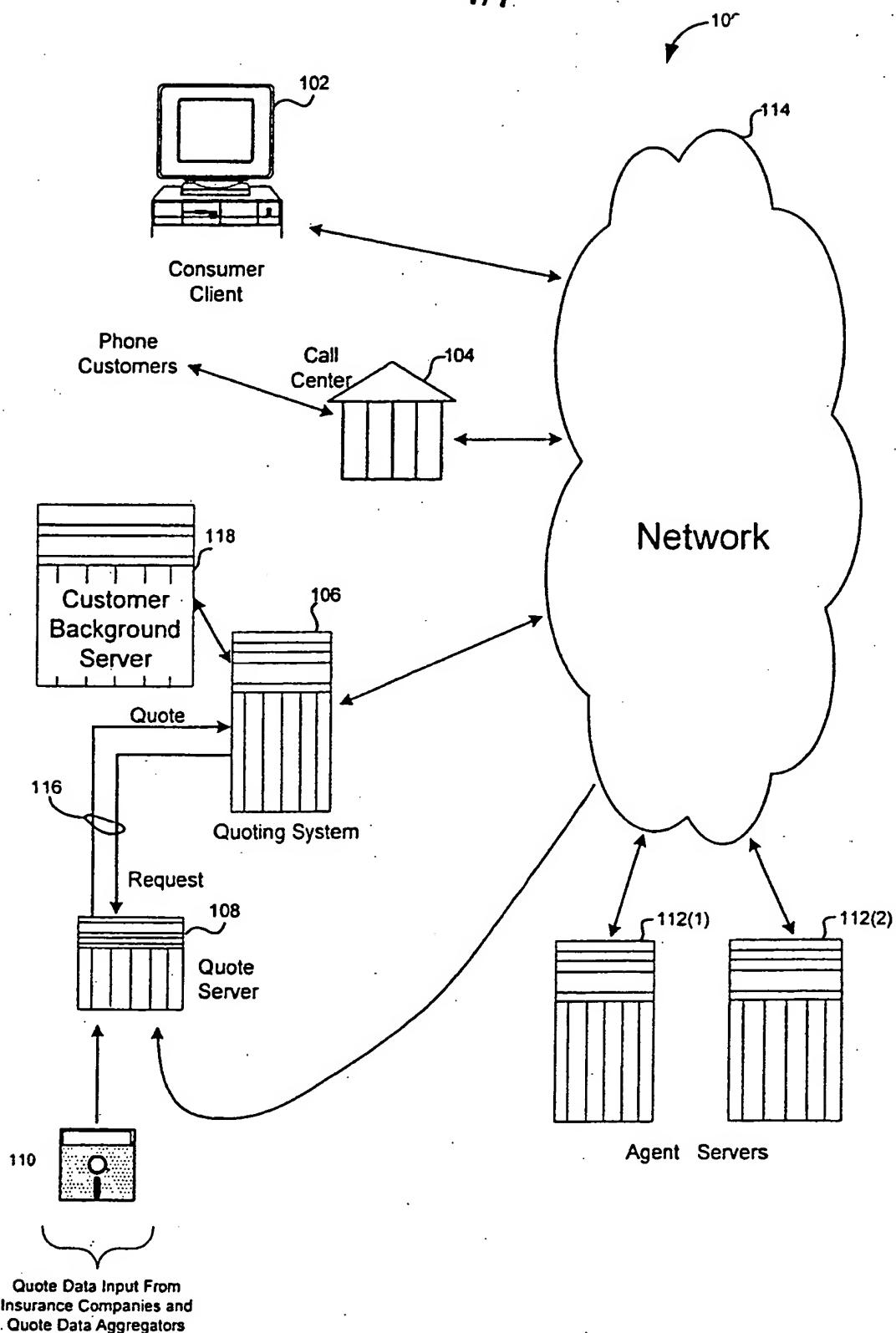


FIG. 1

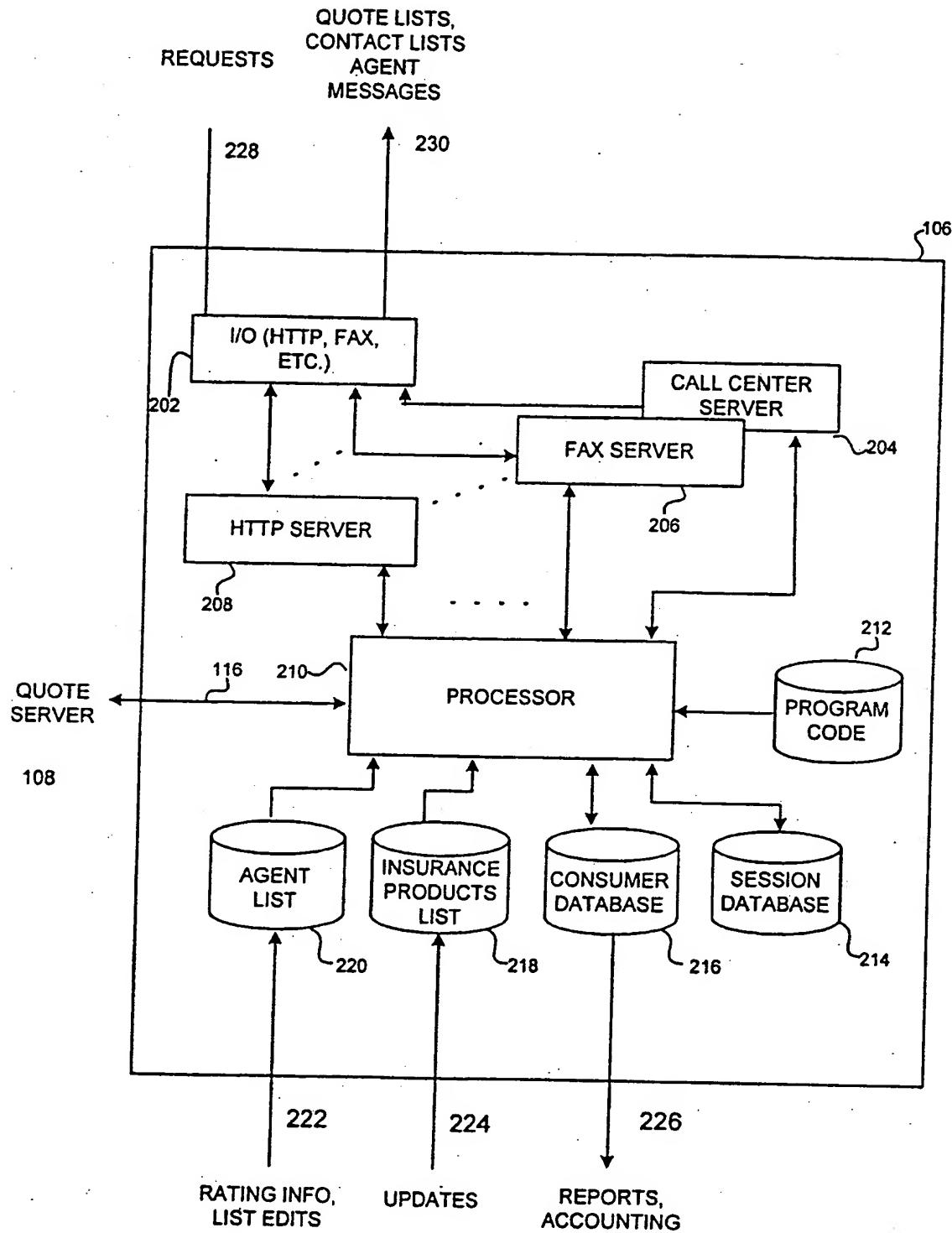


FIG. 2

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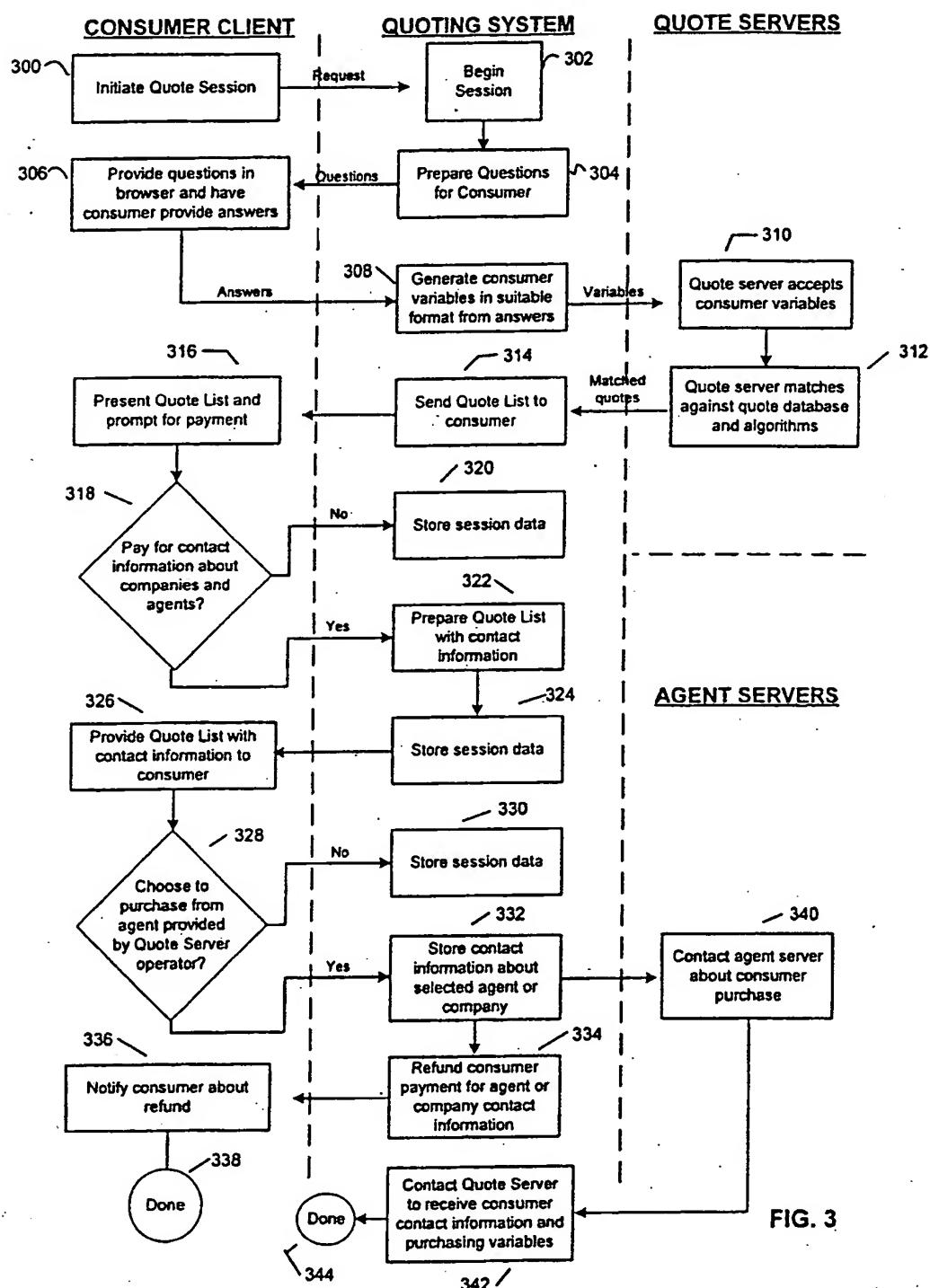


FIG. 3

SUBSTITUTE SHEET (RULE 26)

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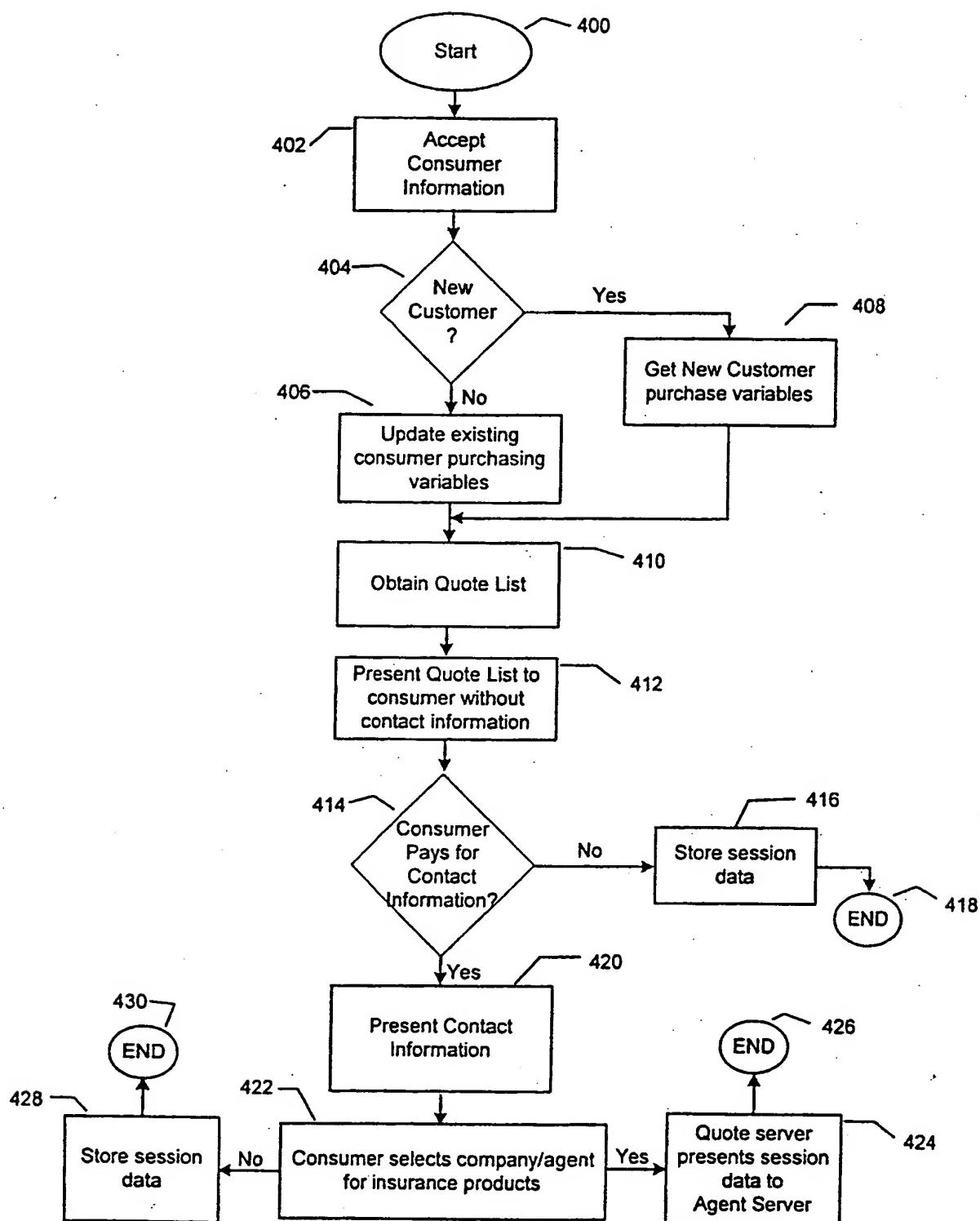


FIG. 4

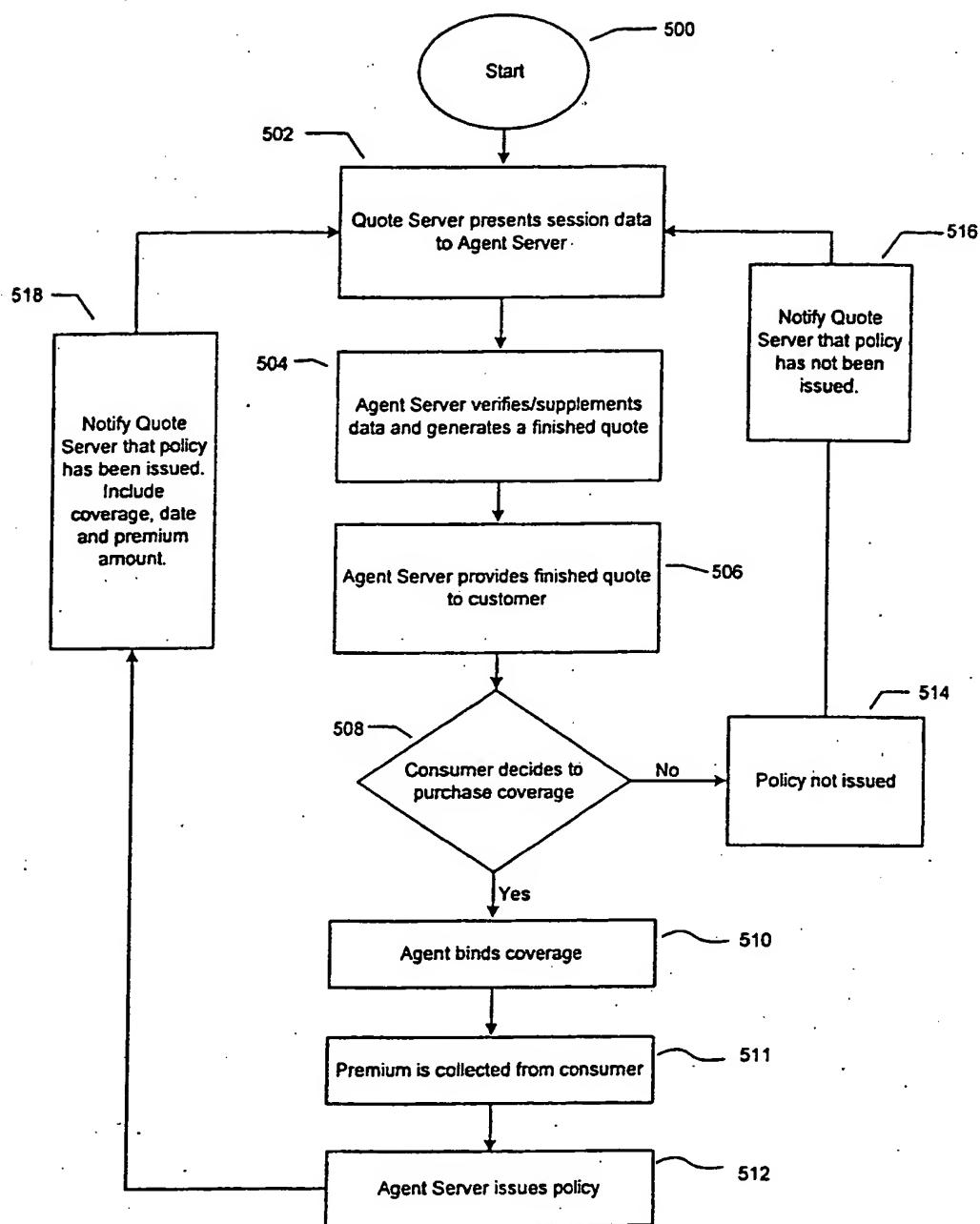


FIG. 5

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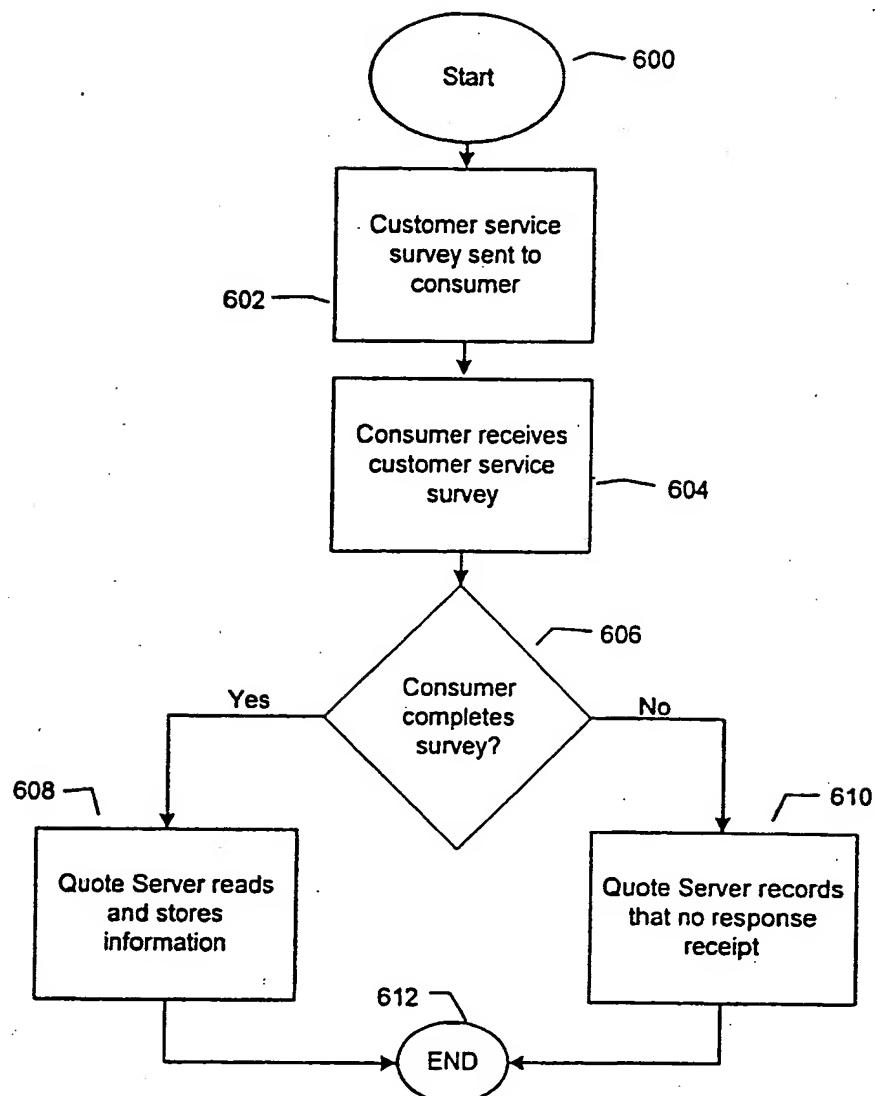


FIG. 6

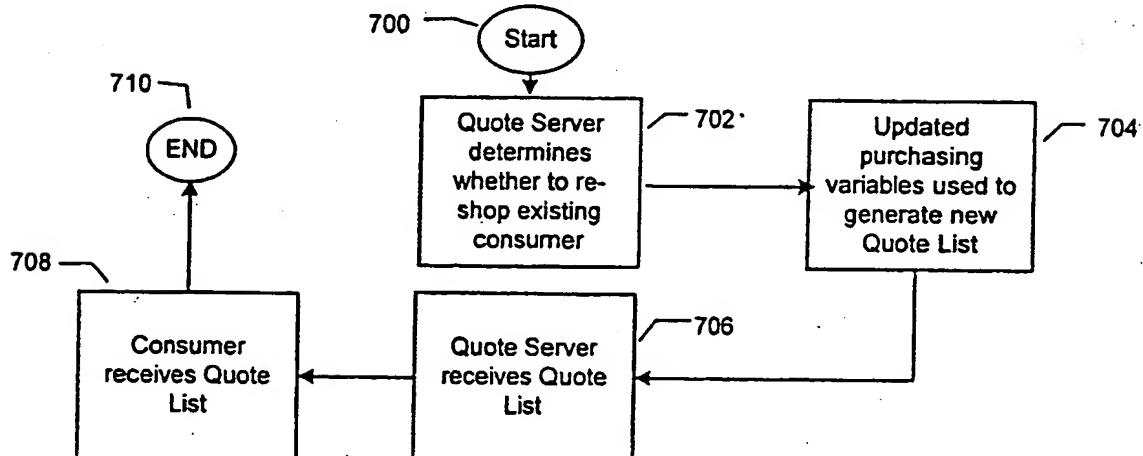


FIG. 7

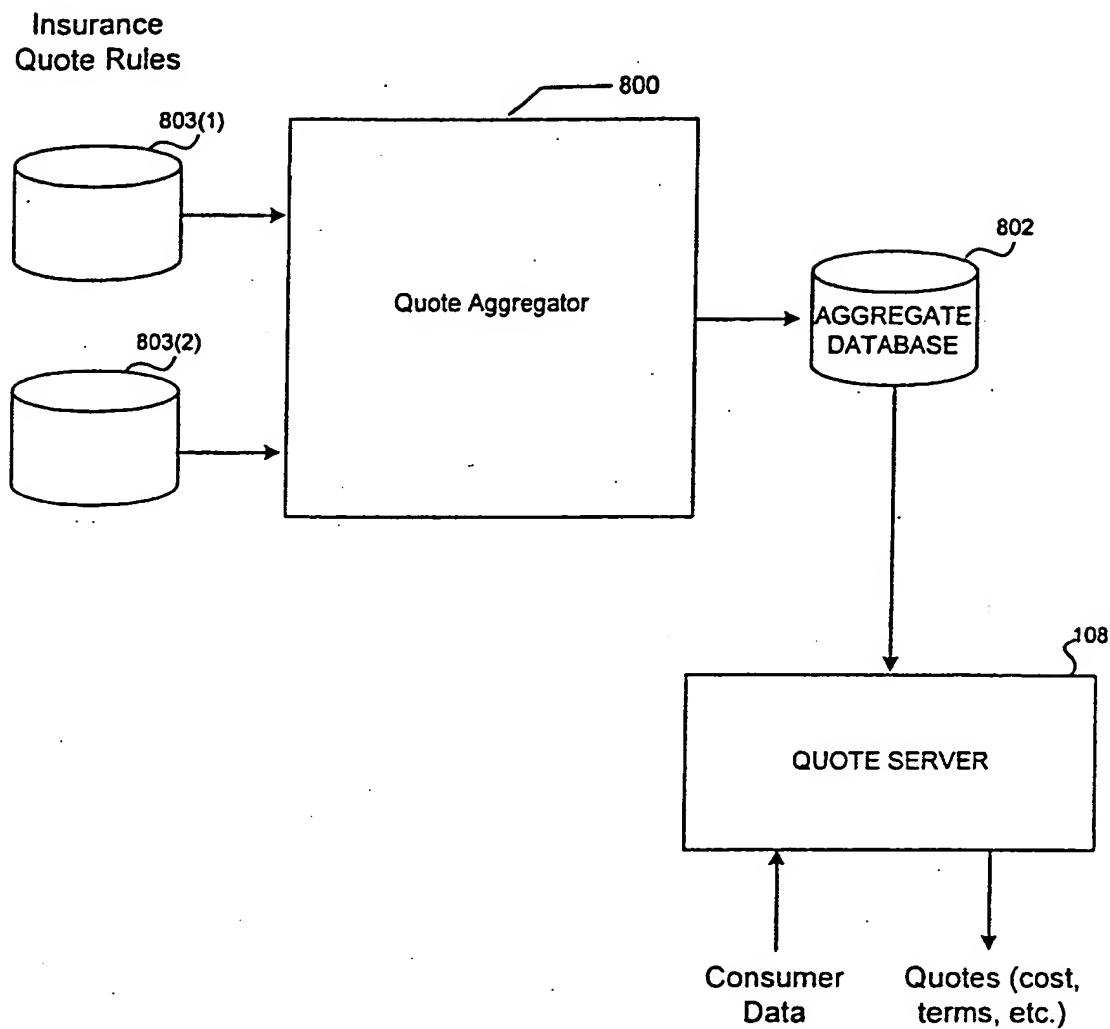


FIG. 8

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US00/21013

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :G06F 17/60

US CL :705/4

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/4

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,992,940 A (DWORKIN) 12 February 1991; col. 1, line 63 - col. 3, line 19.	1, 3, 4, 6
---		—
Y		2, 5
Y, P	US 5,987,434 A (LIBMAN) 16 November 1999; col. 3, line 59 - col. 4, line 52.	2
Y, P	US 6,049,778 A (WALKER et al) 11 April 2000; col. 2, line 39 - col. 3, line 6.	5
A, P	US 5,995,961 A (LEVY et al) 30 November 1999; see entire document.	1-6
A, P	US 5,978,799 A (HIRSCH) 02 November 1999; see entire document.	1-6

<input type="checkbox"/>	Further documents are listed in the continuation of Box C.	<input type="checkbox"/>	See patent family annex.
“A”	Special categories of cited documents: document defining the general state of the art which is not considered to be of particular relevance	“T”	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
“E”	earlier document published on or after the international filing date	“X”	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
“L”	document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	“Y”	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
“O”	document referring to an oral disclosure, use, exhibition or other means	“A”	document member of the same patent family
“P”	document published prior to the international filing date but later than the priority date claimed		

Date of the actual completion of the international search	Date of mailing of the international search report
25 OCTOBER 2000	04 DEC 2000
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer
Faxsimile No. (703) 305-3230	TARIQ R. HAFIZ <i>Jamea R. Matthews</i> Telephone No. (703) 306-5540